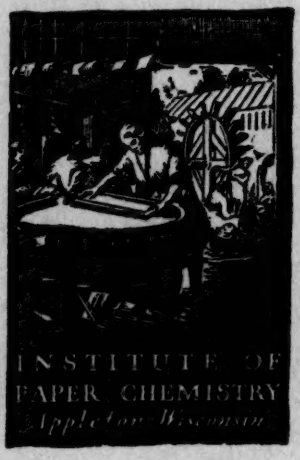
Pages 619-698

BULLETIN

OF

THE INSTITUTE OF PAPER CHEMISTRY



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LIBRARY NOTES

MAY · 1953

Volume 23 Number 9

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AUTHOR INDEX TO BOOKS

Archambeaud, P. 619
Centre Technique Forestier Tropical 620
Dewing, A. S. 619
Espil, L. 620
Frey-Wyssling, A. 620
Ingold, C. K. 619
Larson, R. W. 619
Lieser, T. 619
Manegold, E. 619
Paton, W. A. 619
Savard, J. 620
Schrage, R. W. 619
Sisley, J. P. 620
Spear, M. E. 619
U. S. Forest Service 619
U. S. Government Printing Office ... 620
Vereinigung der Arbeitgeberverbände der Deutschen Papierindustrie e. V. 619
Wilson, E. B., Jr. 620
Wood, P. J. 620

AUTHOR INDEX TO ABSTRACTS

The letter P preceding a page indicates a patent abstract.

Abadie, F. A. 628
Addison, J. S. ..... P 679
Addison-Semmes Corporation ..... P 679
Albin, T. B. ..... P 696
Alden, C. R. ..... P 682
Alfthan, G. v. 662
Allied Chemical & Dye Corporation . P 696
American Asbestos Industries, Inc. . P 678
American Can Company ..... P 688
American Maize-Products Company . 668
American Paper Merchant 651
American Pulpwood Association 623
American Sterilizer Company ..... P 692
Anders, M. F. 636
Anderson, M. S. 671
Anderson, O., Jr. 660
Andrews, P. B. B. 652
Armstrong, W. P. 623
Armstrong Cork Company .. P 678, P 679
Arneson, E. L. ..... P 679
Ash, E. C., Jr. 625
Ashton, D. 658
Association Technique de l'Industrie Papetière 650
Atchison, J. E. 637
Bablick, G. 673
Baldwin-Hill Company ..... P 684
Banks, W. H. 663
Bartell, F. E. 631, 632
Baxter, J. C. ..... P 694
Behr, E. A. 633
Bemis Bro. Bag Company ..... P 691
Bemiss-Jason Company ..... P 683
Bennett, A. L. 623
Bennett, C. G. ..... P 690
Benson, S. R. 659
Bergen, J. T. 675
Berglund, R. E. ..... P 695
Bergstein, S. ..... P 684, P 687
Bernard, J. ..... P 678
Bernard, W. ..... P 678
Bernot, A. 648
Bettendorf, H. J. 624
Bickell, L. K. 622
Bier, M. 641
Bigger, R. P. ..... P 688
Bird & Son, Inc. ..... P 685
Bixler, A. L. M. ..... P 690, P 691
Blatt, D. H. ..... P 693
Bloom, S. M. ..... P 688
Bloomer Bros. Company ..... P 683
Blum, P. 651
Boadway, J. D. 645
Bolton, J. W., & Sons, Inc. ..... P 686
Boor, L. 658
Bord, M. ..... P 682
Bordat, R. 648
Borkowski, T. 630
Børset, A. 664
Bosshart, F. 655
Bousquet, J. A. ..... P 694
Bradie, A. R. 648
Brandt, D. V. ..... P 681
Briggs, D. R. 633
Brissier, M. 646
Brouty, F. 655
Brown, K. J. 667
Bruneau, L. 669
Burma, D. P. 631
Burnett, E. N. ..... 667, P 693
Burroughs Adding Machine Company ..... P 683
Buttress, G. A. ..... P 678
Canzler, H. 634
Casciani, F. 630
Caywood, T. E. 632
Celanese Corporation of America ... P 683
The Champion Paper and Fibre Company ..... P 690
The Chandler & Price Company .... P 686
Chapman, R. S. ..... P 693
Cheek, S. R. ..... P 681
Chemical Engineering 674
Chemipulp Process, Inc. ..... P 681
Chêne, M. 653
Chicago Carton Company ..... P 689
Claridge, E. B. 623
Claridge, R. A. ..... P 690
Collett, G. 673
Collins, T. T., Jr. 623
Container Corporation of America .. .. P 680, P 687, P 688, P 694
Cook, H. D. 643
Cooper, L. F. ..... P 686
Cowie, I. C. ..... P 684
Crinkley, M. A. ..... P 683
Currivan, J. F. ..... P 687
Curtis, F. J. 666
Das, D. B. 638
Davidson, P. B. 656
Davies, H. F. ..... P 687
Davis, C. G. 666
Davis, J. L. 674
Denis, M. 638
Déribéré, M. 666
De Sylva, O. J. ..... P 691
de Wet, C. L. R. ..... P 691
Dickerman, G. K. 673
Dieffenderfer, D. S. ..... P 691
Dilts Machine Works 642
The Dow Chemical Company ..... P 681
du Pont de Nemours, E. I., and Company ..... P 677
Dupouey, M. 653
Easton, W. H. 648
Eckert, L. W. ..... P 678, P 679
Ecusta Paper Corporation ..... P 688
Elfving, L. 629
Elkins, R. H. 674
Elliott, N. J. 632
Emhart Manufacturing Company ... P 687
Eriez Manufacturing Company 645
Ex-Cell-O Corporation ..... P 682
Eyring, H. 627
The Fairfield Paper and Container Company ..... P 680
Fasoli, P. A. ..... P 684
Fayard, J. 655
Fibre Containers 667
Finkbone, B. E. ..... P 680
Fisher, J. I. ..... P 690
Fisher, M. H. 644
Fitchberg Engineering Corporation .. P 685
Flanagan, J. R. ..... P 687

Fleischmann, L. K. .....P 691
Forman, W. O. .....P 685
Fort Pitt Brewing Company .....P 694
Fourcaut, H. 639
Frankenstein, W. P. .....P 694
Freeman, H. 645
Freilich, A. 638
French, J. H. .....P 694
Gabrielson, C. O. 629
Gair, R., Company, Inc. .....P 689
Gamson, B. W. 674
The Gardner Board and Carton Co. .P 680
Gaston, J. E. .....P 679
Gauvin, W. 672
Gavelin, G. 645
Gaylord Container Corporation .625, P 694
Gehm, H. W. 670
General Aniline & Film Corporation P 692
General Electric Company .....P 693
General Motors Corporation .....P 695
George, W. C. .....P 694
Gerber Products Company .....P 693
Gilbert & Nash Company .....P 686
Gillespie, D. C. 626
Girdler, H. 629
Glassine Paper Company .....P 684
Goodrich, B. F., Chemical Company 640
Gordon, J. 630
Goux, A. 656
Gran, G. 628
Graveno, J. C. .....P 682
Great Lakes Carbon Corporation ..P 678
The Great Western Sugar Company .P 687
Grebby, J. W. .....P 682
Gronich, H. E. .....P 696
Gustafsson, C. 671
Hamsten, K. 623
Han, S. T. 674
Hanlon, W. D. 670, 671
Harrison, V. G. W. 660
Haugh, R. R. 647
Hawley Products Company 647
Haynes Stellite Company 632
Heller, H. H. .....P 677
Hergert, H. L. 621
Herrmann, R. H. 633
Hetrick, L. A. 637
The Hettrick Manufacturing Company .....P 681
Heygel, P. R. .....P 688
Heyn, A. N. J. 635
Hiller, L. A., Jr. 627
Hindall, A. L. .....P 695
Hinde & Dauch Paper Company ...P 680
Hollenberg, F. H., Jr. .....P 684
Hollier-Larousse, J.-P. 653
Holy, M. E. .....P 680
Hornbostel, L. 644
Howald, A. M. .....P 679
Huberty, A. W. 644
Inland Wallpaper Company 649
Inman, W. H. .....P 683
Inter-Society Color Council 621
International Cellucotton Products Company .....P 691
Jacobsson, E. G. .....P 680
Jacquiot, C. 640
Jurzyniec, V. V. .....P 682
Kaufert, F. H. 533
Kaufman, E. A. .....P 683
Keller, J. A. 646
Kellgren, W. .....P 692
Kells, B. F. .....P 694
Kelminson, D. 654
Keniston, R. F. 634
Kenneway, H. J., Jr. .....P 692
Kenworthy, R. W. 625
Keyes Fibre Company .....P 688
Kiefer, H. J. 622
King, C. F. 660
Klasing, A. P. .....P 694
Klauditz, W. 640
Kleinert, T. 672
Knights, F. S. 623
Knox, R. E. 651
Köhler, S. 659
Korth, E. 622
Kraft Foods Company .....P 689
Krahler, S. E. .....P 677
Kurth, E. F. 621, 622
Landberge, M. J. 668
Lasater, J. A. 627
Lauth, J.-P. 649
Le Roy, P. 626
Levkoff, D. .....P 683
Levon, B. .....P 695
Libbey-Owens-Ford Glass Company .P 679
Lindsey, E. 635
Loeb, L. 626
Loomer, J. T. .....P 689
Loroco Industries Incorporated .....P 681
Lower, G. W. 665
Ludwig, T. E. 659
Luey, A. T. 625
MacDonald, J. A. 674
McFarland, J. C. .....P 677
McGill, L. S. 646
McGovern, J. N. 667
MacIntyre, W. C. .....P 688
McKnight, G. S., Jr. 671
McLaren, A. C. 642
McLaurin-Jones Co. .....P 692
McPherson, J. A. 653
McRae, D. D. 676
Magill, D. G. .....P 688
Magnani, A. .....P 685
Makara, F. 658
Malcove, N. L. 672
Mandel, J. ..... P 682
Mann, F. R. .....P 693
Mann, W. F. 636
Mareschal, C. 633
Mark, J. G. .....P 680
Marschall, J. W. .....P 692
Martin, G. 656
Martin, J. 624
Martinson, P. A. 664
Maudlin, C. V. 675
Meller, R. R. .....P 683
Meralla, S. 624
Mering, M. 646
Merrill, J. H. 676
Meuly, W. C. 621
Meyer, E. A. .....P 682
Michigan Mushroom Company 649
Mill, C. C. 663
Minbiole, R. J. 664
Miner, H. .....P 693
Minnesota Mining & Manufacturing Company .....P 692
Minster, E. J., Jr. .....P 694
Mires, J. E. .....P 689
Miroux, A. 668
Miscall, J. .....P 678
Mitra, M. K. 638
Modern Packaging 649
Moffett, H. J. .....P 677
Moggio, W. A. 670
Montagnan, R. 642
Montgomery, W. J. .....P 689
Moses, P. J. 637
Mukherjee, R. R. 639
Murdock, H. R. 670
National Council for Stream Improvement 670
Nelson, H. M. .....P 695
Nesty, G. A. .....P 696
Nevin, L. C. .....P 681
Newbold, P. L. .....P 685
Nimer, E. L. 627

Nord, F. F. 641
Nordqvist, N. 660
Ohrn, R. E. ..... P 687, P 688
Oldshue, J. Y. 642
Oliver, M. L. 645
Olsson, I. 661
Oren, J. W. 675
Oriel, B. J. ..... P 690
The Pad-Y-Wax Company, Inc. .... P 687
Page, P. L. 662
Paper Industry 654
Paper Patents Company ..... P 677
Paper Sales 656
Paper Trade Journal 637
Papier, Carton et Cellulose 654, 657
Parmentier, R. R. ..... P 692
Passannante, A. 641
Paterson Pacific Parchment Company ..... P 690
Pattison, E. S. 637
Pearl, I. A. ..... P 696
Pearson, T. 654
Pepper, J. M. 674
Perkins, E. R. ..... P 693
Perkins, J. J. ..... P 692
Perry, H. J. 676
Pihl, L. 661
Pitkänen, E. J. 643
Pogacnik, E. 636
Poitou-Duplessy, J. 675
Pomper, A. W. 639
Poor, E. N. 666
Poulter, S. R. C. 660
Price, A. 657
Probert, M. E. 658
Pulp & Paper 654
Purcell, J. H. ..... P 684
Rahr, C. E. ..... P 678
Ranseen, M. C. ..... P 680
Revon, A. 649
Rice, N. 673
Riegel Paper Corporation .... P 690, P 691
Ringler, W. A. 680
Robertson Paper Box Company Incorporated ..... P 684
Robinson, H. A. 675
Roche, J. C. ..... P 689
Rousseau, J.-R. 653
Roy, M. M. 638, 639
Rudolfs, W. 670, 671
Rupp, W. C. ..... P 685, P 686
Rushton, J. H. 642
The Rust Engineering Company 631
Saarnio, J. 671
Sandborn, J. R. 669
The Sandy Hill Iron & Brass Works ..... P 684
Savage, A. B. ..... P 681
Schmidt, K. 643
Schmorak, J. 664
Schoening, M. A. 622, 623
Schomer, H. A. 650
Schott, W. S. ..... P 694
Schubert, W. J. 641
Schuessler, R. 646
Schweisheimer, W. 666
Schwertfeger, W. J. ..... P 688
Seibenhaar, B. B. ..... P 693
Setzer, H. L. 623
Sève, R. 661
Sharp, A. G. 651
Shell Development Company .... P 696
Shellmar Products Corporation ..... P 691
Shemilt, L. W. 622, 623
Shepard, J. W. 631, 632
Sherman, W. 673
Shirriff, R. G. ..... P 677
Shoumatoff, N. 632, 635
Shouvlin, R. J. 643
Shull, C. P. 623
Slifkin, S. C. ..... P 692
Smart, C. L. 627
Smith, A. E. ..... P 693
Smith, H., Paper Mills, Limited .. 625
Snyder, J. E. ..... P 683
Somerville Limited ..... P 689
Sommer, H. J. ..... P 696
Southworth, M. D. ..... P 686
Southworth Company ..... P 686
Spalding, J. 657
Stern, J. E. ..... P 682
Stevens, G. de 641
Stevens, W. C. 630
Stroop, J. H. ..... P 687
Stuck, H. D. ..... P 686
Stundl, K. 622
Sullivan, F. N. ..... P 689
Sulphite Products Corporation ..... P 696
Sundström, L. 651
Swanson, E. C. ..... P 683
Swinehart, R. W. ..... P 681
Taft, C. S. 669
Taran, H. ..... P 686
Taylor, W. I. ..... P 682
Technical Association of the Pulp and Paper Industry 628, 629, 663
Texte, H. 640
Thilmany Pulp & Paper Company .. 657
Thomas, L. C. ..... P 690
Thorsen, C. 641
Thorsen, G. 643
Tipka, J. 642
Todd, J. E. 634
Tomarin, H. A. ..... P 681
Tremaine, B. K. 621
Trucker, S. L. 658
Tuttle, D. E. 665
Tyreseck, W. J. ..... P 684
Union Bag & Paper Corporation 668
The Upson Company 623
Vanderbilt, R. T., Company, Inc. .. 669
van der Wyk, A. J. A. 664
Van Horn, W. M. 671, 672
Vermeiren, T. 673
Vogt, C. W. ..... P 689
Wacek, A. 624, 641
Wade, C. E. 657
Wahlberg, T. K. 662
Walker, W. C. 665
Wallace, E. C. ..... P 681
Walter, L. 638, 644, 666
Ward, J. E. 664
Wareham, J. F. 638
Warnick, S. ..... P 695
Wass, W. 660
Watson, N. J. ..... P 689
Watson, W. R. ..... P 685
Weber, M. M. ..... P 693
Wells, S. D. 635
Welo, L. A. 626
Welstein, M. ..... P 685
Wheelwright, W. B. 658
Whistler, R. L. 627
Whitaker, D. R. 634
Whitman, S. F., & Son, Inc. ..... P 687
Whitney, R. P. 674
Wilcox, H. 626
Wiley, A. J. 673
Williams, B. M. ..... P 694
Williams, P. H. ..... P 696
Williams, R. C. 663
Williamson, H. 652
Wingfoot Corporation ..... P 683
Winkler, C. A. 672
Woodhams, R. E. 674
Wright, R. H. 622, 623
Zettlemoyer, A. C. 665

BOOK REVIEW

Sisley, J. P. 698
Wood, P. J. 693

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Books and Pamphlets Added to the Library During April

CELLULOSE

LIESER, TH. Kurzes Lehrbuch der Cellulosechemie. Berlin-Nikolassee, Gebrüder Borntraeger, 1953. 288 p.

CHEMISTRY, ORGANIC

INGOLD, C. K. Structure and mechanism in organic chemistry. Ithaca, N.Y., Cornell University Press, 1953. 828 p.

ECONOMICS

PATON, WILLIAM A. Shirtsleeve economics; a commonsense survey. New York, Appleton-Century-Crofts [c1952] 460 p.

FINANCE

DEWING, ARTHUR STONE. The financial policy of corporations. 5th ed. New York, The Ronald Press Co. [c1953] 2 v. 1538 p.

FOAM

MANEGOLD, ERICH. Schaum. Heidelberg, Strassenbau, Chemie und Technik Verlagsgesellschaft, 1953. 512 p.

FORESTS AND FORESTRY

LARSON, ROBERT W. The timber supply situation in Florida. U. S. Forest Service. Forest resource report no. 6. Washington, U. S. Govt. Print. Off., 1952. 60 p.

GRAPHIC METHODS

SPEAR, MARY ELEANOR. Charting statistics. New York, McGraw-Hill Book Co., 1952. 253 p.

MASS TRANSFER

SCHRAGE, ROBERT W. A theoretical study of interphase mass transfer. New York, Columbia University Press, 1953. 103 p.

PAPER MAKING AND TRADE—EDUCATION

VEREININGUNG DER ARBEITGEBERVERBÄNDE DER DEUTSCHEN PAPIERINDUSTRIE e. V. Der Anlernling in der Papierindustrie; Richtlinien und Unterlagen für Ausbildung und Prüfung. Heft 1 der Schriftenreihe zur Berufsausbildung in der Papierindustrie. [Heidelberg, Hubertusverlagsgesellschaft, 1952] 48 p.

PRINTING—DICTIONARIES

ARCHAMBEAUD, P. Dictionnaire anglais-français, français-anglais

des industries graphiques. Paris, Edition de la Revue Caractère, publiée par la Compagnie Française d'Editions [1952] 200 p.

PRINTING, PRACTICAL—STYLE MANUALS

U. S. GOVERNMENT PRINTING OFFICE. Style manual. Rev. ed. Washington, U. S. Govt. Print. Off., 1953. 492 p.

PROTOPLASM

FREY-WYSSLING, A. Submicroscopic morphology of protoplasm. 2d English ed. New York, Elsevier Publ. Co., 1953. 411 p.

RESEARCH

WILSON, E. BRIGHT, JR. An introduction to scientific research. New York, McGraw-Hill Book Co., 1952. 375 p.

SURFACE ACTIVE AGENTS

SISLEY, J. P. Encyclopedia of surface-active agents. Translated from the French and revised by P. J. Wood. New York, Chemical Publ. Co., 1952. 540 p.

WOOD—SACCHARIFICATION

SAVARD, J., and ESPIL, L. Fermentation alcoolique des jus d'hydrolyse de quelques bois tropicaux. Publication no. 3 du Centre Technique Forestier Tropical. Nogent-sur-Marne, Le Centre, 1951. 69 p.

SAVARD, J., and ESPIL, L. Hydrolyse par percolation sulfurique de quelques bois tropicaux. Publication no. 2 du Centre Technique Forestier Tropical. Nogent-sur-Marne, Le Centre, 1951. 118 p.

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

ABILITY TESTS

INTER-SOCIETY COLOR COUNCIL. Color aptitude test. Am. Ink Maker 31, no. 3: 29, 66-7 (March, 1953).

With the aid of the Federation of Paint and Varnish Production Club, a member body, The Council is releasing a new edition of its 1944 color aptitude test. The 1952 edition embodies no major changes in plan, but includes a number of refinements which will make it a more successful tool for the evaluation of color skill in industry. The test consists in having a subject make 40 matches with colored chips; the set comprises an easel with fixed color chips, a chip dispenser with corresponding loose chips, 100 scoring sheets, a scoring chart, and a carrying case. Details of the test, its suitability and limitations, and applications are described. 1 illustration. E.S.

ABSORPTION SPECTRA

HERGERT, H. L., and KURTH, E. F. The infrared spectra of lignin and related compounds. I. Characteristic carbonyl and hydroxyl frequencies of some flavanones, flavones, chalcones and acetophenones. J. Am. Chem. Soc. 75, no. 7: 1622-5 (April 5, 1953).

The hydroxyl and ketone carbonyl infrared frequencies of a series of flavanones and related compounds have been measured. An *o*-hydroxyl group chelated to a carbonyl group effects a shift of 60 $cm.^{-1}$ to a longer wavelength. Shifts to shorter or longer wavelengths were observed when electron-withdrawing or -supplying constituents were introduced into ring positions conjugated with the carbonyl group. The effects of intramolecular and intermolecular hydrogen bonding upon the carbonyl frequency are shown and discussed. 1 table and 18 footnotes. E.S.

ALKALINE PROCESSES—ODOR TROUBLE

MEULY, WALTER C., and TREMAINE, BRECKINRIDGE K. Abatement of sulphate pulp mill malodors by odor masking agents. Tappi 36, no. 4: 154-61 (April, 1953); *cf.* B.I.P.C. 23: 469.

A method for air-borne kraft mill odor abatement is described which consists of masking the principal kraft mill malodors (volatile sulfur compounds) by means of odor masking agents introduced into the digesters and released simultaneously with the malodors throughout the kraft process. The modified kraft odors are less intense and less offensive. The simplicity of application, masking power at very high dilution, and pervasiveness are discussed. Laboratory studies and extensive field tests are described. An attempt at a rational explanation of odor masking has been made based on semiquantitative odorimetric measurements of odor quantities and degree of masking. For this purpose, the values of scent unit (*U*), scent value (*SV*), gram scent value (*GSV*), mask unit (*MU*), mask value (*MV*), and masking ratio (*MR*) have been introduced and defined. It is shown that these values and measurements permit an estimate of kraft mill odors and of quantities of masking

agent required; laboratory results have been supported by literature and field data. 4 tables and 18 references. E.S.

WRIGHT, R. H., SCHOENING, M. A., and SHEMILT, L. W. The effect of black liquor fixation on the release of kraft odors. Tappi 36, no. 4: 180-3 (April, 1953).

An experiment in which the recovery system of a kraft mill was fed exclusively with oxidized black liquor for a period of approximately five hours is described. Analyses of the evaporator effluents and stack gases showed that the amounts of hydrogen sulfide and methyl mercaptan set free were reduced thereby. It is concluded that black-liquor oxidation or fixation should be effective in reducing the area over which the odor from a kraft mill can be perceived. 2 figures and 11 references. E.S.

ALPHA PULP

BICKELL, L. K. High alpha or purified pulps. Can. Pulp Paper Ind. 6, no. 3: 12, 14, 16 (March, 1953).

In a general lecture the author reviews the chemical methods employed to produce dissolving pulps and their applications, principally in the manufacture of viscose and cellulose acetate yarn and staple fiber and in plastics. Other uses of high-alpha pulps for quality papers and specialties are mentioned; recent pulp mills making dissolving pulps are listed. 2 tables and 1 diagram. E.S.

BACTERIOLOGY

KORTH, E., and STUNDL, K. Damage to paper manufacture through the activity of bacteria. Das Papier 7, no. 5/6: 92-5 (March, 1953). [In German; English and French summaries]

In groundwood pulp which had been stored in a silo, the formation of butyric, acetic, and formic acids occurred which resulted from bacterial activity and caused an offensive odor of the pulp. Paper produced from this groundwood had appreciably reduced strength properties. Investigations in the laboratory and on a large scale showed that the bacterial activity can be satisfactorily checked by the addition of small amounts of copper sulfate (100 g./100 kg. of ovendry wood); the chemical should be added to the water during the grinding process. 4 tables, 1 figure, and 4 references. E.S.

BARK

KIEFER, HARRY J., and KURTH, E. F. The chemical composition of the bast fibers of Douglas-fir bark. Tappi 36, no. 1: 14-19 (January, 1953).

Bast fibers from Douglas-fir bark were examined for their chemical composition. The extractive content was found to be 13.5%, which is low when compared with an extractive content of over 40% in the cork fraction of this bark. The bast fibers appear to be a lignocellulose material with a high lignin content and a corresponding low holocellulose content. At least three different "lignin" materials are present in the bast fibers. The cell wall of the bast fibers shows the presence of concentric rings or layers. A central cavity or lumen appears to contain living protoplast. Pits terminating in the lumen are also in evidence. The fibers are surrounded by a matrix of a reddish-brown phenolic acid. This material is responsible for the relatively high lignin content of the fibers. 9 tables, 4 figures, and 16 references. E.S.

BARKERS AND BARKING

AMERICAN PULPWOOD ASSOCIATION. Barking in the United States. Papier, carton et cellulose 1, no. 4: 69-78 (September-October, 1952). [In French]

The following papers were presented at a meeting held in York, Pa. on May 23-24, 1949: Setzer, H. L. Results obtained with hardwoods in the barking drum by the Champion Paper and Fibre Co., p. 72; Claridge, E. B. Results obtained with a Thorne barker at the Hammermill mill at Erie, p. 73; Knights, F. S. Results obtained with the Allis-Chalmers Streambarker by the Armstrong Forest Co., p. 74-5; Bennett, A. L. Preliminary treatment of trees for facilitating bark removal, p. 76-7; Shull, C. P. The effect of time and storage of wood on the natural loss of bark, p. 78; Hamsten, Knut. The Åström barker, p. 78; and Armstrong, W. P. Other barkers, p. 78. 4 illustrations. E.S.

BLACK LIQUOR—OXIDATION

COLLINS, T. T., JR. The oxidation of sulphate black liquor. Paper Trade J. 136, no. 12: 37-40; no. 13: 19-22, 24 (March 20, 27, 1953).

A comprehensive review of the literature on the subject of black-liquor oxidation is given under the headings: advantages of oxidation, Bergström-Trobeck system, corrosion study, Tomlinson studies, INKA evaporating system, Bialkowsky and DeHaas studies, Wright's research, work of Collins, other studies, and Mannbro analysis. 67 references. E.S.

SCHOENING, M. A., SHEMILT, L. W., and WRIGHT, R. H. Black liquor oxidation and the absorption of non-condensable digester gases. Tappi 36, no. 4: 176-9 (April, 1953).

An experimental black-liquor oxidation unit is described which is very compact and which can be made to effect substantially complete oxidation of the sodium sulfide in black liquor with complete absence of foaming. The spent air which issues from the unit carries no detectable amounts of hydrogen sulfide or methyl mercaptan. Digester gases after passage through a condenser to remove the greater part of the condensable material can be added to the air entering the oxidation unit and this serves to absorb substantially all the hydrogen sulfide and methyl mercaptan contained in these noncondensable gases. With correct operation of the oxidation unit, the addition of noncondensable digester gases to the air does not appear to impair the oxidation efficiency nor does it lead to a bad odor in the spent air leaving the unit. Calculations suggest that significant amounts of sulfur which would otherwise be lost can be retained in the system as a result of this procedure. 1 table, 6 figures, and 3 references. E.S.

BOARD

ANON. Anacortes Veneer's hardboard plant. Paper Trade J. 136, no. 10: 16-18 (March 6, 1953); *cf.* B.I.P.C. 23: 391.

The manufacture of "Armorboard" by a semidry process from Douglas-fir waste is described. A Grenco continuous horizontal digester is used for cooking the chips. The plant is entirely owned by its 270 employees and is operated as a co-operative. 6 illustrations. E.S.

THE UPSON COMPANY, *Lockport, N.Y.* Monoesters make cellu-

lose dimensionally stable. Chem. Eng. News 31, no. 13: 1322-3 (March 30, 1953).

Impregnation of wood and other cellulose fiber materials with glycol dicarboxylic acid monoesters imparts dimensional stability to the materials by a new process developed by the company; *cf.* U. S. patents 2,629,648, 2,629,674, and 2,629,701 granted to Walter P. Ericks Feb. 24, 1953; B.I.P.C. 23: 594-5. E.S.

BOARD—CONVERSION

BETTENDORF, HARRY J. Youth in a youthful, growing industry. Fibre Containers 38, no. 3: 46, 48, 53-4, 56 (March, 1953).

The sheet plant of Lewis Container Co. at Colby, Wis. is described; a corrugator was added and placed in operation in February, 1953. The principal features of the enlarged plant, including materials-handling and box-fabricating equipment, are discussed. A novel corrugated-box use developed by the Company involves a rat trap (Kelly's Rat Cafeteria); the corrugated form replaces a former steel trap used with the highly lethal chemical Warfarin. 12 technical illustrations. E.S.

MARTIN, JOHN. The offshoot of a wooden box factory. Am. Boxmaker 42, no. 3: 11-13 (March, 1953).

The author traces the development of the Green Bay Box Co. at Green Bay, Wis. which started operations as a wooden box factory and later turned to the manufacture of corrugated and folding boxes. The personnel policy, safety program, boxboard-supply arrangements, plant facilities, and art department of the folding box division are described. The company uses five Miehle printers and four Miehle cutters of various sizes to convert over 6000 tons of folding boxboard per year. 3 illustrations. L.C.

BOARD—SHEET FORMATION

WACEK, A., and MERALLA, S. Fiber felting and fiber bonding. Holzforschung 6, no. 3: 65-70 (1952). [In German] *cf.* B.I.P.C. 22: 594-5.

The authors studied the process of sheet formation which is due to the felting and bonding of the fibers and the influence of these processes upon the resulting strength properties. Since most previous work along this line dealt with paper (a more or less two-dimensional structure), the authors used laboratory-prepared, spruce-groundwood fiberboards without the addition of binding agents (synthetic resins) to investigate the influence of hot pressing different plies upon felting in the direction perpendicular to the plane. Half of the plies were dyed with methylene blue and used alternatively with undyed plies. When the plies were first cold pressed, the finished board after hot pressing consisted of layers which separated readily into the original plies when their permeability to steam was low and "steam pockets" (I) were formed between the individual layers. When the steam could readily escape from the still sufficiently moist plies, hot pressing resulted in bonding. The sound given off by boards dropped on a hard foundation will give an indication of their homogeneity; boards which contain (I) sound much duller than uniform ones. When nondewatered round pulp sheets (again alternating dyed and undyed plies) were hot pressed, the plies separated readily, whereas when the sheets were cut into strips and arranged in different patterns in the press, a distinct felting became noticeable after hot pressing as measured by the tensile strength on bending (II) of the boards. Boards prepared from groundwood or holocellulose were similar in appearance and had similar

(II). However, when the hemicelluloses were removed with alkali from the holocellulose, the resulting boards were of lower quality and exhibited reduced strength properties. The authors conclude that sheet formation is the result of a continuous transition of bonding (in the molecular sphere) through felting of the fibrils to felting of the macroscopic wood fibers and fiber bundles. With regard to strength properties, felting phenomena are of utmost importance. Of the chemical constituents, the hemicelluloses are considered the responsible factor for the bonding effect; lignin on account of its thermoplastic properties acts as a fixing agent. 1 table, 7 figures, and 15 references. E.S.

BOARD, BOX

LUEY, A. T. Surface and body characteristics of board for printing. Tappi 36, no. 4: 124-7A; discussion: 127A (April, 1953).

The author discusses uniformity of caliper, moisture content and relative humidity, rupture strength and pick, and compressibility (body characteristics), and color and brightness uniformity, sizing for gloss inks, and smoothness (surface characteristics) of boards as they affect the printed result. 3 references. E.S.

BOARD, BRISTOL

HOWARD SMITH PAPER MILLS, LIMITED. The inside story of bristols. Inland Printer 131, no. 1: 37 (April, 1953).

Definitions for solid, pasted, twin-wire, and cylinder bristols are given. E.S.

BOARD SPECIALTIES

GAYLORD CONTAINER CORPORATION. Returnable fiber carrier for paper milk bottles. Food Eng. 25, no. 4: 167 (April, 1953); *cf.* B.I.P.C. 23: 222.

A brief description of the returnable carrier for paper milk bottles of weather-resistant, laminated fiberboard covered by U. S. patent 2,612,305 (Sept. 30, 1952) is given. 1 illustration. E.S.

BOARD TESTING—PHYSICAL

KENWORTHY, R. W., and ASH, E. C., JR. Hardboard panels for sound absorption at low frequencies. Trend Eng. Univ. Wash. 5, no. 2: 10-12, 23 (April, 1953).

The sound-absorption coefficients of hardboard panels of several thicknesses, shapes, and backing conditions were investigated in a similar manner as plywood panels had previously been tested (*cf.* J. Acoust. Soc. Am. 22: 531-2 [1951]). Hardboard ⅛-inch thick was found preferable to the 3/16-inch and ¼-inch specimens on both economic and performance grounds. Curved panels were found noticeably superior to flat and splayed (V-shaped) panels, especially with the addition of an absorbent backing, such as kapok felt. The work done to date shows that there is considerable similarity in acoustic properties of resonant panels whether made of hardboard or plywood, and also that unexpected variations may appear with any panel. If such panels are to be used for accurate treatment of audio rooms, it seems desirable to use only types of panels which have been previously tested. Additional tests on various combinations of thickness, material, shape, and acoustical treatment are in progress. 2 tables, 4 figures, and 3 references. E.S.

WILCOX, HUGH. The effects of pressing temperature and heat treatments on the relationships between head speed, span, and modulus of rupture of hardboard. Tappi 36, no. 4: 189-92 (April, 1953); *cf.* B.I.P.C. 23: 472-3.

An investigation was made of the effects of several head speeds and spans on the modulus-of-rupture values of three classes of hardboard: (1) untempered commercial hardboards, (2) the same hardboards after undergoing various degrees of heat treatment in an oven, and (3) experimentally produced hardboards pressed at various platen temperatures. The smallest variations in modulus values in each case occurred at head speeds of about 4 in./min. Hardboards that were heat treated in an oven for 35 hours at 284°F. showed that increased head speeds resulted in increased modulus-of-rupture values when tested on short spans. Hardboards that were manufactured at temperatures of 400° and above gave decreased modulus values with increased head speeds. The results of these tests indicate that a span of at least 6 inches should be used when testing ⅛-inch hardboard, and at least 10 or 12 inches for ¼-inch board. 7 figures and 5 references. E.S.

BOOKBINDING

LE ROY, PIERRE. The use of paper and board in industrial binding. Papier, carton et cellulose 1, no. 4: 63-4 (September-October, 1952). [In French]

The author discusses the possibilities of papers and boards in industrial binding and emphasizes certain precautions (correct use of machine direction in folding, care in pasting end-leaf papers to prevent warping, uniform thickness of boards, etc.). The use of bound books in place of paper covers is increasing in France. 3 illustrations. E.S.

CAUSTICIZING AND RE-CAUSTICIZING

GILLESPIE, D. C. Some notes on current recausticizing practice. Tappi 36, no. 4: 147-51 (April, 1953).

In a recent field survey, pulp mill superintendents and operators in 29 southeastern mills reported over-all operation of continuous recausticizing systems to be good but listed three specific phases—the slaking operation, diaphragm pump maintenance, and scaling of lines—as needing additional attention. Procedures for improving operations in these areas are suggested. A new simplified design for "unit-type," green-liquor clarifiers and dregs washers has given improved performance over tray types in initial tests. Two variations of the standard recausticizing flowsheet are described—i.e., two-stage slaking and two-stage causticizing, both of which have recently gone into operation in eastern mills. The principal advantage of two-stage slaking is improved hot-lime handling, and of two-stage causticizing, higher causticizing efficiencies. 2 tables, 3 figures, and 2 references. E.S.

CELLULOSE—CRYSTALLINITY

LOEB, L., and WELO, L. A. Magnetic anisotropy of cellulosic materials. Textile Research J. 23, no. 4: 251-7 (April, 1953).

The results of a survey of the magnetic anisotropy of a group of cellulosic materials measured according to the Krishnan "oscillation" method (*cf.* Phil. Trans. Roy. Soc. A234: 265-98 [1935]) are presented. The technique is described for the application of this method to the measurement of the anisotropy of fibrous materials. Experimentally it was found necessary to subject the samples to brief pretreatment with cold dilute acid in order to

obtain concordant results for a given material. Data are given to show the effect on the observed anisotropy of variations in this pretreatment. The results of magnetic anisotropy measurements are discussed as to their possible usefulness in characterizing molecular orientation. It is shown that for materials of a given crystalline modification (cellulose I or II) the observed anisotropy is primarily a function of molecular orientation, but that the anisotropy varies with orientation in a different manner for the two crystalline modifications. The influence of variations in the amount of crystalline material on the observed anisotropy is also discussed briefly. 2 tables, 2 figures, and 15 references. E.S.

CELLULOSE—DEGRADATION

WHISTLER, ROY L., and SMART, CHARLES L. Isolation of crystalline D-glucose and cellobiose from an enzymatic hydrolyzate of cellulose. J. Am. Chem. Soc. 75, no. 8: 1916-18 (April 20, 1953).

Crystalline D-glucose and cellobiose have been isolated from cell-free enzymatic hydrolyzates of cellulose. Whereas crude enzyme preparations hydrolyze cellulose to D-glucose as the only detectable simple sugar, an enzyme preparation purified by adsorption on and elution from powdered cellulose reacts with swollen cellulose to produce cellobiose as the major product for the first three hours of hydrolysis. The formation of a disaccharide intermediate in the enzymatic hydrolysis of cellulose is thus proved. Some properties of the purified enzyme preparation are described. 3 figures and 12 references. E.S.

CELLULOSE—VISCO-ELASTICITY

LASATER, J. A., NIMER, E. L., and EYRING, H. Mechanical properties of cotton fibers. Part I: Relaxation in air and water. Textile Research J. 23, no. 4: 237-42 (April, 1953).

The relaxation at constant elongation of cotton fibers showed that the relaxation process is complex. The relaxation curve for both the airdry and the water-saturated cotton fibers can be successfully approximated using the sum of two exponential terms. The relaxation constant for the fast relaxation process is approximately 1000 times larger than the constant for the slow process. A mechanical model consisting of two Maxwell units in parallel has a relaxation equation at constant elongation of the same form as the equation for the relaxation of the cotton fibers. With the use of this model it is possible to treat the relaxation constants further, and it is found that the principal portion of the free energy of activation relaxation is in the entropy term. The theoretical treatment of the data from this work indicate that the relaxation occurs through segmented motion of the chains rather than the whole chain moving at one time. 7 tables, 5 figures, and 8 references. E.S.

CELLULOSE ESTERS

HILLER, L. A., JR. The reaction of cellulose acetate with acetic acid and water. J. Polymer Sci. 10, no. 4: 385-423 (April, 1953). [French and German summaries]

Kinetics and energy changes during the homogeneous reaction of cellulose acetates with acetic acid and water are discussed. The reactions involved are a fast second-order reaction of the primary groups and a slower second-order reaction of the secondary groups. These reactions are interdependent, simultaneous, and reversible. A third simultaneous reaction is that of hydrolytic (or acetolytic) degradation of the chain molecule. Equilibrium and rate con-

stants and energies of reaction and of activation are calculated and discussed. 13 tables, 19 figures, and 19 references. K.W.,Jr.

CELLULOSE ESTERS—NITROCELLULOSE

ABADIE, F. A. The percentage of nitrogen, and the corresponding influence on the fractionation, the viscosity measurements, and the heterogeneity of nitrocelluloses. Norsk Skogind. 7, no. 3: 68-74 (March, 1953). [In English; Norwegian and French summaries]

A review of previous work and some new measurements on chain-length distribution in various nitrocelluloses is presented. The author confirms the conclusion that viscosity depends both on the D.P. and D.S. (degree of substitution). Several methods for obtaining the chain-length distribution curve are discussed. Nitration to the trinitrate eliminates the D.S.; where this is not feasible, as in fractionating commercial cellulose nitrates, a double fractionation may be employed, but this is time consuming and requires large amounts of materials. The author recommends that in such cases each fraction be analyzed for nitrogen content and viscosity, that the viscosities be converted to D.P. by the use of Jullander's K_m values for various nitrogen contents (*cf.* Arkiv Kemi, Mineral. Geol. 21A, no. 8 [1945]) and that the D.P.-distribution curve then be drawn. 5 tables, 6 figures, and 39 references. K.W.,Jr.

CHEMICAL TESTING—ALKOXYL GROUPS

GRAN, GUNNAR. Determination of alkoxyl groups. III. An investigation on the determination of methoxyl in carbohydrate-containing substances. Svensk Papperstidn. 56, no. 5: 179-80 (March 15, 1953). [In English] *cf.* B.I.P.C. 22:733.

Methoxyl values of 0.1-0.4% on pure glucose led to an investigation of the Vieböck and Schwappach method. Prolonged distillation (four to six hours) gave high values for several carbohydrate materials and it was theorized that an alkyl iodide in addition to methyl iodide is formed. Using the apparatus and general procedure described previously (*cf.* B.I.P.C. 22:733), the alkyl iodides formed in the distillation were absorbed in a solution of absolute trimethylamine in absolute alcohol saturated with tetramethylammonium iodide (I). The alkyl iodides other than methyl iodide remained in solution and the precipitate, e.g., (I), was collected on a filter and dissolved; the methoxyl content was then determined by the usual procedure with standard thiosulfate. Wood gave somewhat lower values by this method than by that of Vieböck and Schwappach. 2 tables, 1 figure, and 9 references. R.C.R.

GRAN, GUNNAR. Determination of alkoxyl groups. IV. An investigation on absorption solutions. Svensk Papperstidn. 56, no. 6: 202-3 (March 31, 1953). [In English]

Experimental results indicate that aqueous solutions are satisfactory for the absorption of the alkyl iodides formed in alkoxyl determinations by the method of Vieböck and co-workers. The solutions should be buffered to pH 3-4, and should contain 0.5-1 mole of potassium bromide per liter to keep the bromine in solution. Certain substances which react with bromine (e.g., citric acid) should not be used as buffers. 4 tables and 1 reference. R.C.R.

CHEMICAL TESTING—CALCIUM SULFATE

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY.

Analysis of calcium sulphate fillers. Tappi 36, no. 4: 134-5A (April, 1953).

This is a proposed revision of TAPPI Official Standard T 615 m-44. E.S.

CHEMICAL TESTING—PAPER—ACIDITY

ELFVING, LENNART. "pH in paper." Svensk Papperstidn. 56, no. 6: 241-2 (March 31, 1953). [In Swedish; German and English summaries]

Different methods for the determination of pH in paper are critically compared. The cold extraction according to TAPPI Standard T 435 m-42 is recommended; the hot extraction may give misleading results. 8 references. E.S.

CHEMICAL TESTING—PAPER—MOISTURE

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Moisture in paper by toluene distillation. Tappi 36, no. 4: 137-9A (April, 1953).

The text of Tappi Tentative Standard T 484 m-53 is presented; it covers a rapid and accurate method for the determination of moisture in comparatively small samples of waxed, varnished, etc. papers, in which moisture cannot be determined by the oven-drying method T 412 m; it is not intended as a replacement of the latter. 1 figure and 1 reference. E.S.

CHEMICAL TESTING—PULP—LIGNIN VALUE

GIRDLER, HORTON. Bleachability test for highly lignified pulps. Tappi 36, no. 4: 128A (April, 1953).

A modification of TAPPI Standard T 214 m-50 (permanganate number of pulps) to make it applicable to semichemical pulps is suggested, in which the pulp sample is reduced to a more uniform degree of subdivision, the amount of 0.1 *N* potassium permanganate added is increased, and the final answer (called the NCCS number) is calculated by subtracting the millimeters of sodium thiosulfate from 200 (millimeters of potassium permanganate added). R.C.R.

CHEMICAL TESTING—STARCH

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Analysis of starch and starch products. Tappi 36, no. 4: 135-7A (April, 1953).

The text of TAPPI Tentative Standard T 638 m-53 is presented; it covers the sampling of starch and starch products and determinations of moisture, ash, cold-water soluble matter, pH value, foreign material, and protein. E.S.

CHEMICALS

GABRIELSON, C. O. The wood chemical industry in Sweden. Paper and Timber (Finland) 35, no. 3: 73-8 (March, 1953). [In Swedish; English summary]

The author discusses the manufacture of organic chemicals from by-products of the pulp industry in Sweden, including sulfite alcohol, crude tall

oil, sulfate turpentine, cymene, and methanol; some cellulose is also used for the manufacture of chemicals. The value of the yearly production of organic chemicals derived from the pulp industry is about 50 million Swedish crowns or a little less than one third of the total Swedish production of synthetic organic chemicals. Following a brief survey of the historical development of this industry, the principal products and their production rates are discussed. The increasing competition from other European producers has forced the industry to a considerable expansion during the last three years, so that the production cost per ton produced could be lowered. The industry is now in a better position to meet the foreign competition. In conclusion, the Swedish ethyl alcohol market and the competitive position for organic chemicals made from ethyl alcohol are discussed. 2 tables, 4 figures, and 3 references.
E.S.

GORDON, JOSEPH. New pattern for chlor-alkali. Chem. Week 72, no. 14: 28-36, 38, 40, 42 (April 4, 1953).

A comprehensive report, including statistics, manufacturers, expansion, and forecasts for the U. S. production of chlorine, caustic soda, and soda ash is presented. 4 tables and 4 charts. E.S.

CHIPS

STEVENS, W. C. Chip testing and influence of chip size on pulping variables. Paper Mill News 76, no. 12: 80-2 (March 21, 1953); Can. Pulp Paper Ind. 6, no. 5: 8-10 (May, 1953).

With reference to the importance of uniform chip size in sulfite cooking, the author describes the control tests for determining moisture, density, and percentage of good chips (classification test) and sawdust employed in his mill. The influence of chipper-knife sharpness and type of steel used in a four-knife and 10-knife chipper showed the superiority of the latter with regard to output of acceptable chips and lower knife wear. The sawdust tests give a good indication of the satisfactory operation of the chipper knives. The length and thickness of the chips were found to have a direct bearing on pulp yield; in this particular mill, chips ¼-inch long and 3/16-inch thick gave the best yield of chips of satisfactory quality. 7 tables. E.S.

CHLORINE DIOXIDE

CASCIANI, FERRI. Uses of chlorine dioxide and chlorites in pulp and paper. Paper Trade J. 136, no. 10: 21-5 (March 6, 1953); *cf.* B.I.P.C. 23: 92.

Following a brief introduction on the chemical reactions involved, the author reviews the application of chlorine dioxide and chlorites to the removal of plant incrustants and pulp bleaching. 108 references. E.S.

CHROMATOGRAPHY

BORKOWSKI, T. Chromatographic study of effect of hydrochloric acid on filter paper. Ann. Univ. Mariae Curie-Sklodowska, Lublin-Polonia 6, Sect. D: 55-67 (1951); Brit. Abstr. B II:1230 (December, 1952). [Abstract only available]

Drops of 0.1-1.0 *N* hydrochloric acid are placed on filter paper, which is then dried at room temperature (about two hours). Chromatographic analysis shows that glucose, cellobiose, xylose, and arabinose are formed under these conditions. *N* sulfuric acid does not hydrolyse paper at room temperature, but the same sugars are produced by the action of *N* sulfuric acid and acetic anhydride at 100°C. E.S.

BURMA, D. P. Partition mechanism of paper chromatography. Anal. Chem. 25, no. 4: 549-53 (April, 1953).

An attempt is made to throw more light on the role of cellulose in paper chromatography. It is actually shown that in the chromatographic separation on paper the primary process responsible for the separation is no doubt "partition" but the role of adsorption, although a secondary one, cannot be neglected. 8 tables and 24 references. E.S.

CONCRETE

THE RUST ENGINEERING COMPANY. Bleach plant "poured" by sliding form method. Paper Mill News 76, no. 14: 20 (April 4, 1953); Paper Ind. 35, no. 1: 39 (April, 1953); Southern Pulp Paper Manuf. 16, no. 4: 21 (April, 1953); Tappi 36, no. 5: 94A (May, 1953).

The building for the new six-story, 150-ton bleach plant of the Hollingsworth & Whitney Co. at Mobile, Ala. (which employs the Kamyr continuous bleaching system) was poured by the sliding-form method of concrete construction in 10 days, including columns and nine bleaching towers. This type of construction is claimed to be 10 times faster than a similar construction with fixed or movable forms. 1 illustration. E.S.

CONTACT ANGLE

BARTELL, F. E., and SHEPARD, J. W. Surface roughness as related to hysteresis of contact angles. I. The system paraffin-water-air. J. Phys. Chem. 57, no. 2: 211-15 (February, 1953).

Surface roughness has been defined in terms of the average height of the asperities (I) and the average angle of inclination of the faces of the asperities to the horizontal (II). A quantitatively reproducible roughness was produced on paraffin surfaces, and the apparent angles of contact made by water drops on these surfaces were measured. Conditions for the formation of reproducible contact angles on roughened surfaces have been stipulated. The advancing contact angle was found to increase with an increase in (II), whereas only a slight decrease, if any, was observed in the receding contact angle. Hysteresis was found to increase with an increase in (II), but to be relatively independent of the (I). On the basis of the results obtained, a mechanism for the advancement of water drops across roughened paraffin surfaces is proposed. 3 tables, 4 figures, and 20 footnotes. E.S.

BARTELL, F. E., and SHEPARD, J. W. Surface roughness as related to hysteresis of contact angles. II. The systems paraffin-3 molar calcium chloride solution-air and paraffin-glycerol-air. J. Phys. Chem. 57, no. 4: 455-8 (April, 1953).

Paraffin surfaces of controlled roughness were prepared as previously described by ruling in such a manner as to produce on the surface regular pyramids of height (I) and angle of inclination (II) of the faces. As with the system paraffin-water-air previously reported upon, so also in the systems paraffin-3 *M* calcium chloride-air and paraffin-glycerol-air, contact-angle values were unaffected by changes in the (I). For the system paraffin-3 *M* calcium chloride-air, both the apparent advancing and apparent receding contact-angle values increased for an increase in (II). For the system paraffin-glycerol-air, the apparent advancing contact-angle values increased, whereas the apparent receding contact-angle values decreased for an increase in (II). Hysteresis values for both systems studied increased with an increase in (II), but were relatively independent of changes in (I). Wenzel's (*cf.* B.I.P.C.

7:24) theory was found to be inapplicable to the data obtained for the paraffin systems involving water, 3 *M* calcium chloride, and glycerol. It was demonstrated that the contact angle and resultant drop shape are determined at the line of contact of the solid-liquid-air interface and are not altered by surface irregularities beneath the bulk of the drop. 2 tables, 1 figure, and 6 footnotes. E.S.

SHEPARD, J. W., and BARTELL, F. E. Surface roughness as related to hysteresis of contact angles. III. The systems paraffin-ethylene glycol-air, paraffin-methyl cellosolve-air and paraffin-methanol-air. J. Phys. Chem. 57, no. 4: 458-63 (April, 1953).

Paraffin surfaces of controlled roughness were prepared, as previously described, so as to produce thereon regular pyramids of height (I) and angle of inclination (II) of the pyramid faces. These surfaces were used to study the effect of roughness on contact angles formed by liquids which on a smooth paraffin surface formed contact angles less than 90°. For ethylene glycol and for methyl cellosolve on these roughened paraffin surfaces, as the (II) of the pyramid faces increased, the apparent advancing contact-angle values increased, whereas the apparent receding contact-angle values decreased. For methanol on these surfaces, as the (II) increased, the apparent advancing contact angle decreased, whereas the apparent receding contact angle became zero. The hysteresis observed increased with an increase in (II), except for methanol for which the hysteresis observed decreases. Changes in the (I) had no effect on the observed contact angles nor on hysteresis. Wenzel's (*cf.* B.I.P.C. 7:24) theory was found inapplicable to these systems. On the basis of these and previous results an explanation of the effect of surface roughness is proposed. 5 tables, 4 figures, and 11 footnotes. E.S.

CORROSION

CAYWOOD, T. E. Armour Research Foundation Project. Tappi 36, no. 4: 156-7A (April, 1953).

A report on Project I 899-9 on digester corrosion is given, and the plans of the Armour Research Foundation in connection with this project are discussed. E.S.

HAYNES STELLITE COMPANY. Hastelloy, a new corrosion-resistant alloy. Paper Mill News 76 no. 12: 120 (March 21, 1953).

Hastelloy alloy F, a new nickel-molybdenum-chromium-iron alloy, will withstand the corrosive effects of both oxidizing and reducing agents, can handle acid and alkaline solutions, will resist pitting and stress-corrosion cracking in chloride solutions, and has good hot-working characteristics. It gives excellent results in service in the top vapor zone of a sulfite digester; it offers a remarkable combination of properties for the new duplex cooking processes starting under acid conditions (pH 4) and requiring alkaline conditions (pH 9) for the final part of the cook. 3 illustrations. E.S.

SHOUMATOFF, NICHOLAS. Digester Corrosion Subcommittee. Tappi 36, no. 4: 154-6A (April, 1953).

The activities and authorized projects of the Subcommittee are reviewed. The major current project is the Armour Research Foundation Project. E.S.

COST—ACCOUNTING

ELLIOTT, NORMAN J. Pricing and estimating. Article 8. Estimat-

ing folding carton costs. Boxboard Containers 71, no. 724: 34-7 (April, 1953); *cf.* B.I.P.C. 23: 549.

Cost estimating for folding-carton orders emphasizes certain factors more than others. Sheet size and caliper must be chosen with reference to other production factors; die and make-ready costs are estimated by applying the hourly rate for the equipment to the known time standard for make-ready; storage, handling, shipping, and other nonmanufacturing costs are considered elements of overhead and may be built into hourly rates for estimating and allocation purposes. The author suggests that many cost-estimating duties can be delegated to department cost clerks. Printing and die-cutting cost estimators make good candidates for supervisory positions in the cost program of the folding-carton industry. 5 illustrations of cost-estimating forms. L.C.

DESICCANTS

HERRMANN, R. H. Trends in dehydrated packaging. Modern Packaging 26, no. 8: 200-4 (April, 1953); *cf.* B.I.P.C. 23: 482-3.

The author reviews the developments and basic principles in the use of desiccants in military and nonmilitary packages, with particular reference to silica gel. Dehydrated packaging, which was originally developed for military purposes, is now a tested technique which is applied to many other uses, such as the packaging of delicate instruments, radio equipment, hard candy, potato chips, vegetable seeds, and metallic powders. 1 table, 6 figures, and 2 references. E.B.

DIATOMACEOUS EARTH

MARESCHAL, C. The use of diatomaceous earth in papermaking and board manufacture. Assoc. tech. ind. papetière, Bull. no. 1: 1-6 (1953). [In French]

Some of the advantages of diatomaceous earth (I) used with or in place of other fillers—despite its somewhat higher cost—are listed. When 3-6% is added to the beater, retention is practically complete. (I) does not decrease the tensile or bursting strength of the paper, and in some instances appears to cause an increase; it improves the drainage of the stock and permits a speed-up on the paper machine; the final sheet normally shows higher air and vapor porosity, although it is not more porous to water. (I) improves sheet formation and aids in the retention of small fibrils, other loading materials, and coloring matters. The smoothness and uniformity of the sheet are often improved by (I), which also serves to increase opacity; it causes better distribution of rosin, pitch, paraffin, and similar substances, and the final sheet shows better handle. Despite its medium brightness, its high retention of pigments like titanium dioxide may actually serve to produce papers of 80-82% brightness. 7 photomicrographs. L.E.W.

DIFFUSION

BEHR, E. A., BRIGGS, D. R., and KAUFERT, F. H. Diffusion of dissolved materials through wood. J. Phys. Chem. 57, no. 4: 476-80 (April, 1953).

The theoretical equations derived by Stamm (*cf.* U. S. Dept. Agr., Tech. Bull. 929 [1946]) to describe the diffusion in softwoods were checked by two methods involving the measurement of diffusion of sodium chloride and of naphthalene through wood disks and into blocks of wood. The results indicate that the equations are tenable. Possible deductions concerning wood structure are presented. 5 tables and 7 footnotes. E.S.

DIGESTERS

CANZLER, H. Stainless-steel clad cellulose digesters [for sulphite pulp] Chem. & Process Eng. 33: 379 (1952); Brit. Abstr. B II: 1227 (December, 1952). [Abstract only available]

The composite plates, 25-30 mm. of mild steel plus 3 mm. of stainless steel, are hot rolled and perfectly bonded, so that they take up the mechanical stresses jointly. They are formed to shape and welded together; the welded seams are x-rayed. The capacity of the vessel is increased 12-20% by the elimination of the brick lining, so that the higher cost is justified. E.S.

DOUGLAS-FIR

KENISTON, ROBERT F. Economy of Douglas fir in the Pacific Northwest. Sci. Monthly 76, no. 3: 173-81 (March, 1953).

The author discusses the Douglas-fir resources of Washington and Oregon and the problems involved in the growing, harvesting, and utilization of crops of this species. Future trends and forestry requirements needing further study and development are indicated. 2 tables, 5 illustrations, and 5 references. E.S.

ELECTRIC PRECIPITATORS

ANON. Southern pulp mill gets wet-bottom precipitator. Chem. Eng. 60, no. 4: 142, 144 (April, 1953); *cf.* B.I.P.C. 23: 246.

Of the seven precipitators built by Research Corp. for the Savannah mill of Union Bag & Paper Corp., six are of the dry-bottom type; the seventh unit—which has recently been installed—uses the wet-bottom flow method. The seven precipitators will handle a volume of over 875,000 cu. ft./min. on full load at about 275-300°F. with 90% rated efficiency. 1 illustration. E.S.

EMPLOYMENT MANAGEMENT

TODD, J. E. Selection of technical personnel. Paper Trade J. 136, no. 13: 17-18 (March 27, 1953); Tappi 36, no. 4: 123-4A (April, 1953).

The many factors which have developed the need for technical personnel with certain essential qualifications and some of the methods for making the proper selection for the specific jobs in the paper industry are discussed. 1 table. E.S.

ENZYMES

WHITAKER, D. R. Purification of *Myrothecium verrucaria* cellulase. Arch. Biochem. and Biophys. 43, no. 2: 253-68 (April, 1953).

The cellulase in culture filtrates of *Myrothecium verrucaria* was purified by a sequence of concentration, precipitation by ammonium sulfate, fractionation with ethanol, and precipitation with polymethacrylic acid. The enrichments in enzyme activity toward the following substrates were approximately the same: untreated cotton linters, swollen cotton linters, a cellulose degraded by acid hydrolysis, a substituted soluble cellulose, and cellobiose. The purified enzyme was electrophoretically homogeneous at 3 pH's and homogeneous in the ultracentrifuge. It is suggested that its mechanism of cellulose breakdown is unienzymatic, and evidence supporting this mechanism is discussed. 3 tables, 4 figures, and 17 references. E.S.

EVAPORATION AND EVAPORATORS

LINDSEY, ERNEST. Evaporation. Chem. Eng. 60, no. 4: 227-40 (April, 1953).

The author discusses the standard types of evaporators most used today (climbing-film, long-tube vertical type or Kestner evaporator; forced-circulation type; and falling-film, long-tube vertical type) and some units which have recently come into commercial use, including the Turba-Film evaporator, flashing evaporators, and the Rosenblad switching evaporator for scale-forming liquors (spent sulfite liquor). Other methods of evaporation (solar evaporation, jacketed kettles, submerged combustion, and use of electrical energy) are mentioned briefly; methods used to save energy, costs, separators, and new instruments are also considered. 16 figures and 19 references.
E.S.

FIBER—IDENTIFICATION

HEYN, A. N. J. The identification of synthetic fibers by their refractive indices and birefringence. Textile Research J. 23, no. 4: 246-51 (April, 1953); *cf.* B.I.P.C. 23: 16-17.

A simple method is described for the differentiation of synthetic fibers by their refractive indices and birefringence, using the technique of central illumination. 1 table, 3 figures, and 6 references. E.S.

FLAX

WELLS, SIDNEY D. Decortication and pulping of seed flax straw. Tappi 36, no. 4: 176-8A (April, 1953).

Previous work on the pulping of seed-flax straw is reviewed, including government studies by the Bureau of Plant Industry and the Forest Products Laboratory and the development of cigarette paper prior to the outbreak of the second world war. With reference to U. S. patent 2,452,533 granted to Wells on Oct. 26, 1948 (*cf.* B.I.P.C. 19: 289) for a rod-mill treatment of flax straw which effects the separation of fiber and shive, a cold caustic treatment of the fluff with subsequent refining in a Bauer disk refiner and passage through a Vortrap, followed by bleaching with calcium hypochlorite (patent application pending) which results in a pulp suitable for fine-paper manufacture is described. 6 tables and 1 figure. E.S.

FLUID DYNAMICS

SHOUMATOFF, NICHOLAS. The hydrodynamic resistance of particles. Tappi 36, no. 4: 184-9 (April, 1953).

A more generalized method of calculating the hydrodynamic resistance of particles is attempted. Assuming continuity of relationships for massed and isolated particles, a critical re-examination is made of the basic geometric model and of the dimensional analysis. A new measure of characteristic size for particles of unspecified shape is presented. Because of the nonlinear effect of velocity, it is found that, in principle, no adequate measure of average velocity is available if the particles are in a state of agitation. On the same basis, the nonexistence of a general resistance transformation between massed and isolated particles is demonstrated if the particles are of nonuniform size. For the case of uniform particles, this general transformation is carried out. Rather than attempt to reconcile the conflicting conclusions of previous workers, the experimental verification of the present analysis is limited to a single unusually comprehensive and consistent set of data for uniform spheres (*cf.* Wilhelm and Kwauk, Chem. Eng. Progress

44: 201-18 [1948]). The validity and precision of the resulting equation are demonstrated by statistical analysis. The applicability of the experimental constants to shapes other than spheres is discussed. 4 tables and 6 references. E.S.

FOLDING BOXES

ANON. The best in folding boxes. Modern Packaging 26, no. 8: 178-81, 305-6, 308 (April, 1953); Boxboard Containers 71, no. 724: 44-8 (April, 1953); Am. Boxmaker 42, no. 4: 17-18, 20, 22, 24, 26, 28, 32, 34, 37-8, 40 (April, 1953); Fibre Containers 38, no. 4: 136-8, 140, 142, 144-5 (April, 1953); *cf.* B.I.P.C. 22: 663.

Winning entries in the 1953 carton competition sponsored by the Folding Paper Box Association of America were unveiled at the annual meeting of the association, held at the Drake Hotel, Chicago, on March 23, 24, and 25. There were a total of 147 awards distributed to 51 companies. The winners in the several classifications are listed and photographs of the best and some of the superior ratings are given. Numerous illustrations. E.B.

FORESTS AND FORESTRY

MANN, WILLIAM F. Thinning of loblolly pine. Pulp & Paper 27, no. 4: 78, 81 (April, 1953).

The Maxwell study of short-rotation thinning practices of loblolly pine stands for pulpwood production on sample plots of the Urania Lumber Co., Urania, La. is described, including one unthinned check plot and three different thinning treatments. The 36-year records and results indicate that maximum pulpwood production over a 33-year rotation is obtained either without any intermediate thinning or with only one or two light commercial salvage cuts. After age 33, however, heavy mortality of merchantable-size trees reduced net cordwood growth on the check plot to considerably less than that of any of the thinned plots. This conclusion applies only to loblolly pine on fair or better sites. 2 tables and 1 illustration. E.S.

POGACNIK, EDWARD. Economics in sustained yield forest management. Pulp Paper Mag. Can. 54, no. 4: 126-8, 131 (March, 1953).

The silvicultural methods employed at Forest Lehen, an experimental forest in Yugoslavia, are described. The productivity of Lehen has increased annually since sustained-yield measures were adopted in 1909; in 1919 the inventory showed 28.20 cords per acre, and by 1948 the volume had grown to 42.20 cords per acre. Cutting in 11 separately inventoried units takes place every four years, and frequent inventories are taken to keep abreast of changes in species distribution. The economic principles of establishing an intensively managed forest are briefly given, the point of highest economic yield is discussed, and fire and disease conditions at Lehen are described. 1 graph and 2 tables. L.C.

FUEL

ANDERS, M. F. To burn wood efficiently choose properly designed combustion chamber. Power 97, no. 4: 90-3 (April, 1953).

The construction of the two types of Dutch-oven design, the conventional and producer-gas types, and the steam raising properties and burning behavior of the common West-Coast fuel woods (California redwood, western hemlock, Douglas-fir, western pine, and western spruce) are discussed. 4 tables and 5 figures. E.S.

GLYCERIN

PATTISON, E. SCOTT. Glycerine in paper production. Paper Trade J. 136, no. 11: 19-20 (March 13, 1953).

The important applications of glycerin in the paper industry are outlined, including plasticizers for paper and glue, its use in combination with wet-strength agents, for cleansing tissues with and without antiseptic compounds, and similar uses. 12 references. E.S.

HARD WOODS

ATCHISON, JOSEPH E. Utilization of hardwoods for production of newsprint in foreign countries. Paper Trade J. 136, no. 12: 24-5 (March 20, 1953); Indian Pulp and Paper 7, no. 8: 389-92 (February, 1953).

The author describes successful developments in Italy for the manufacture of newsprint from 80 to 85% mechanical poplar pulp and 15 to 20% softwood chemical pulp. Although the machines have operated at speeds not higher than 700 f.p.m., a new high-speed machine has recently been installed which, it is believed, will be able to operate with this furnish at speeds up to 1300 f.p.m. In Australia, *Eucalyptus regnans* is used for the production of groundwood pulp, and newsprint is manufactured from 80% eucalyptus mechanical pulp and 20% imported softwood chemical pulp at speeds up to 1250 f.p.m. In Germany, studies on the development and use of poplarwood from hybrids suitable for growth in that country are under way; Turkey is attempting a poplar culture similar to that existing in Italy, and in Peru attempts are being made to utilize the fast-growing Cetico tree. E.S.

HEATING (INFRARED)

PAPER TRADE JOURNAL. Certain-Teed dries paper with gas burners. Paper Trade J. 136, no. 11: 14-15 (March 13, 1953).

The successful installation of eight radiant gas burners to increase the drying capacity of the machine making felt sheets for asphalt roofing products at the Richmond, Calif. plant of Certain-Teed Products Corp., including the necessary safety features, is described. A 12% increase in machine production was obtained, with an increase in operational costs from an average of $2.51 to $2.82 per ton. 2 illustrations. E.S.

INSECTS AND VERMIN

HETRICK, L. A., and MOSES, P. J. Value of insecticides for protection of pine pulpwood. J. Econ. Entomol. 46, no. 1: 160-1 (February, 1953).

Emulsion concentrates diluted with water to 0.5% of active ingredients of aldrin, benzene hexachloride, chlordane, dieldrin, endrin, isodrin, heptachlor, toxaphene, and a 50-50 mixture of benzene hexachloride and toxaphene were sprayed within a few hours after felling and stacking on pulpwood lengths of loblolly, slash, and longleaf pine mixed indiscriminately in the tests; four untreated piles were randomly distributed as controls among the treated ones. Four weeks after treatment an evaluation of the effectiveness of the different insecticides against bark beetles and sawyers was made; the results are given in tabular form. All chemicals were found to provide some protection to the freshly cut pinewood; benzene hexachloride was superior to all of them. 1 table. E.S.

INSTRUMENTATION

FREILICH, ARTHUR. Instrument panel selection and graphic panels. Southern Pulp Paper Manuf. 16, no. 4: 48, 50, 52, 54 (April, 1953).

The general merits of graphic and conventional instrument panels are considered under the general headings: nature of process, control requirements, ease of startup, training of operators, maintenance, and cost to facilitate the selection of the proper controls for a given application. 6 figures. E.S.

WALTER, LEO. Correct choice of instruments in pulp and paper manufacture. Paper Ind. 34, no. 12: 1453-5 (March, 1953).

Examples for the correct selection of instruments for the measurement of pH, specific gravity and density, liquid level, and conductivity, and their automatic control are given. The principal factors in the selection of measuring or controlling instruments are reviewed and the importance of co-operation between mill personnel and instrument supplier before and after their installation is discussed. 2 illustrations. E.S.

INSURANCE

DENIS, MICHEL. The insurance against risks incurred by products of the paper industry during transportation. Papier, carton et cellulose 2, no. 1: 49-52, 55-6 (March-April, 1953). [In French]

The author discusses the different stipulations; responsibilities of supplier, shipper, and buyer; and risks involved in the insurance of products related to the paper industry (pulpwood, pulps, paper, rags, and waste paper) during maritime transportation. E.S.

JUTE

DAS, D. B., MITRA, M. K., and WAREHAM, J. F. Association of glucose, arabinose and xylose in jute. Nature 171, no. 4353: 613-4 (April 4, 1953).

As a result of more recent hydrolytic studies, it appears that there is a chemical union between α-cellulose and the pentosans. Inasmuch as both xylose and arabinose are present in the α-cellulose fraction (prepared by extracting jute holocellulose with 17.5% caustic soda), the arabinose seems to be present in the pyranose form. 14 references. L.E.W.

ROY, M. M. The air flow method of measuring the specific surface of jute—II. The study of chemically treated fibres. J. Textile Inst. 44, no. 3: T90-4 (March, 1953); *cf.* B.I.P.C. 21: 92.

The cause of the high value of the proportionality factor in the Kozeny equation for raw jute has been examined, and it has been found that as the stiffness increases, so does the value of *K*. Cross-sectional characteristics have been found to be unaffected by chemical treatment, whereas stiffness is modified considerably. Delignification to 4.2% reduces stiffness only slightly. A reduction in stiffness of about 50% has been observed on treatment with 5% sodium hydroxide solution, whereas a 12.5% solution reduces the stiffness to a value almost equal to that of cotton. 3 tables, 1 figure, and 11 references. R.C.R.

ROY, M. M. Mechanical properties of jute. II. The study of

chemically treated fibres. J. Textile Inst. 44, no. 1: T44-52 (January, 1953).

Jute fibers were chemically treated in two ways: (*a*) delignification with chlorite and (*b*) treatment with sodium hydroxide solutions of different concentrations to remove the hemicelluloses but leave the lignin content practically unchanged. The load-elongation curves of delignified jute are linear whereas those for fibers treated with 1.0% or 5.0% alkali resemble that of cotton. Jute fibers which have been treated with strong alkali produce curves with less slope than those for similar fibers which have been treated with alkali of low concentrations. The strength of jute decreases on delignification and treatment with sodium hydroxide solution; the more pronounced effect is obtained with a strong solution (12.5% or 17.5%). The extension at break of the fibers does not change appreciably on delignification and alkaline treatments up to a concentration of 9.0%; beyond this range the extension of the fibers increases sharply. The stiffness of jute gradually diminishes on delignification and treatment with alkali; the reduction is most noticeable and sharper with treatments with strong alkalies. Application of tension after treatment with 17.5% sodium hydroxide solution increases the strength and decreases the percentage extension at break of the fibers in comparison with the unstretched, and the increase is directly related to the degree of stretching. On wetting, the strength of all the samples, including raw jute, decreases and the magnitude of the decrease is about the same for all the samples, excepting the delignified sample having 0.78% residual lignin where a complete loss in strength on wetting was observed. 2 tables, 6 figures, and 21 references.

R.C.R.

ROY, M. M., and MUKHERJEE, R. R. Mechanical properties of jute. I. J. Textile Inst. 44, no. 1: T36-43 (January, 1953).

A comprehensive study of the mechanical properties of raw jute includes explanations of the methods and samples used and relates present results with the work of other investigators. The average tenacity of raw jute is given as 4.40 grams per denier for a 4-cm. test length at 65% R.H. The strength of jute is a maximum at the middle, and lower values are obtained at the root and tip of the strands. Both tenacity and Young's modulus bear a nonlinear positive correlation with fineness, and the extension at break is independent of fineness. With increase in humidity up to 70% R.H. the tenacity and Young's modulus of both jute and flax increase, but beyond 70% R.H. they decrease more abruptly in flax than in jute. With a very small speciment length (1 mm.) for flax, however, the loss in strength on wetting is very appreciably reduced. Elongation at break increases slightly with an increase in the percentage of R.H. 4 tables, 5 figures, and 18 references.

R.C.R.

LABORATORIES

FOURCAUT, HÉLÈNE. The control of printing paper by user and distributor. Papier, carton et cellulose 1, no. 4: 55-7 (September-October, 1952). [In French]

The activities and services of the French paper testing laboratory of the Société Professionelle des Papiers de Presse and different paper-testing instruments in use are described. 4 illustrations.

E.S.

POMPER, A. W. Organization of a small engineering laboratory. Tappi 36, no. 4: 171-5A (April, 1953).

The organizational procedures used by the engineering laboratory of the

John Waldron Corp. with several hundred employees engaged in the design and manufacture of paper, plastic, and textile converting machinery are described to illustrate the necessary organization and management control in the small laboratory. 9 figures (including several report forms) and 5 references. E.S.

TEXTE, H. The Laboratoire Général pour Emballages and rail shipment of goods. Papier, carton et cellulose 1, no. 5: 63-4 (November-December, 1952). [In French]

The activities of the packaging laboratory maintained by the French railways in Paris are outlined. The transfer of the laboratory to larger, better equipped quarters will take place as soon as the necessary financial arrangements have been concluded. 2 illustrations. E.S.

LATEX, SYNTHETIC

B. F. GOODRICH CHEMICAL COMPANY, *Cleveland.* Reveal techniques for wet addition of latex to pulp at beater. Chem. Processing 16, no. 4: 44-5 (April, 1953).

A method for incorporating Hycar latex at the beater is outlined so that complete coagulation will be accomplished; conditions will vary with the type of pulp and the desired rubber pickup. However, in certain hard-water areas or where excessive beating and jordanning are required, the latex in dilute solution is preferably added just prior to sheet formation. E.S.

LIGNIN

JACQUIOT, C. New studies on lignification processes in tissues isolated from trees and cultivated *in vitro.* Assoc. tech. ind. papetière, Bull. no. 1: 23-5 (1953). [In French] *cf.* B.I.P.C. 22: 740.

Tissues from the cambial zone of a young oak and poplar and from chestnut (in which case the material was transplanted 19 times) were studied. Grown in culture media similar to those used by Gautheret (*cf.* Compt. rend. soc. biol. 144: 173-4 [1950]) or with slight modifications, the tissues showed signs of chemically incomplete lignification; certain color reactions, such as the phloroglucinol test were positive, whereas others (e.g., Mäule test) were negative. The nutrients used and the results obtained are listed in tabular form. 1 table, 3 photomicrographs, and 5 references. L.E.W.

KLAUDITZ, W. The biological-mechanical action of lignin in the trunk of coniferous and deciduous woods. Holzforschung 6, no. 3: 70-82 (1952). [In German; English summary]

The biological-mechanical task of lignin for the development of strength in wood is discussed. The hydrophobic and water-repellent properties of lignin affect the hydrophilic components of the cementing material in the middle lamella and the primary cell wall. The low wet-tensile strength of pulp fibers results from the removal of lignin and its hydrophobic effect. By the removal of lignin, the wet strength of the bonding zones in the middle lamella and the primary cell wall is eliminated, but the bonding effect of the residual pectopolyuronides (I) remains. The wet strength (also called the biological strength) of beech- and poplarwood drops to about 10.5-17% on delignification; i.e., the hydrophobic lignin increases the biologically effective strength about 6-10 times. The preservation of the total biological-mechanical efficiency of the delignified wood (i.e., holocellulose) (II) is proved by the

determination of the technical strength of the air-dried and delignified woods. On treatment of (II) with 0.2% sodium hydroxide, the remainder of the wet strength is lost by increased hydration and by the removal of (I), particularly from the middle-lamella region. In agreement with Wardrop and Dadswell (*cf.* B.I.P.C. 18: 831) it is found that a loose connection remains between the secondary walls through the middle lamella, in spite of the loss of the wet strength. When (II) is dehydrated in air, a strong bond is restored. The (I) which produce this strength are tentatively called "sparingly soluble" (I) and are considered to be the carrier of the bonds between the individual pulp fibers in the technical paper sheet formation. 5 tables, 5 figures, and 65 references. F.E.B.

SCHUBERT, W. J., PASSANNANTE, A., STEVENS, GEORGE DE, BIER, M., and NORD, F. F. Investigations on lignin and lignification. XIII. Electrophoresis of native and enzymatically liberated lignins. J. Am. Chem. Soc. 75, no. 8: 1869-73 (April 20, 1953); *cf.* B.I.P.C. 23: 488.

The native lignins from oak and white Scots pinewood were analyzed electrophoretically at various stages of purification. The dependence of the electrophoretic mobility of these lignins on pH and ionic strength was determined. Oak, maple, and cork lignins, and commercial Indulin were found to present patterns characteristic of a homogeneous compound. Native and enzymatically liberated lignins from white Scots pine gave identical patterns, both characterized by the presence of small secondary components. The application of this method to lignins has definite advantages for determining the purity and homogeneity of the preparations, but is limited in scope, principally on account of only small differences in electrophoretic mobilities observed between various lignins. 3 tables, 5 figures, and 19 footnotes. E.S.

WACEK, A. Lignin building stones and lignin fragments. Österr. Chem. Ztg. 54, no. 5/6: 61-6 (March, 1953). [In German]

The author discusses the nature of the lignin building stone, with particular reference to coniferyl alcohol and its derivatives, and as obtained from the isolation of the degradation products from the lignin of the holocellulose preparation, the lignin determination with 72% sulfuric acid, and the isolation of organosolv lignins. He stresses the necessity of isolating lignin fragments in which two or more lignin building stones still adhere to one another for studying the mode of linkage between these units. In different reactions an equivalent weight of 450 has frequently been observed which would correspond to approximately 2.5 monomeric lignin building stones. 3 tables and 25 references. F.E.B.

MACHINERY—BEATERS

THORSEN, C. Beaters. Papier, carton et cellulose 1, no. 5: 71-5 (November-December, 1952). [In French]

The evolution of the beater is traced from the earliest hollanders to recent developments. By means of diagrams the construction of 16 different beater types (Umpherston, Tower, Hoffsümmer, Horne, Niagara, Kölliker, Huber, Schmidt, a two-roll construction, Eichorn, Bertrams, Wolf-Mallickh, Rapid-Supra, Rhenane, Banning, Thorsen-Hery, Galiani, and Victory) and their special features and applications are described briefly. 16 diagrams. E.S.

MACHINERY—CUTTERS

ANON. Cutter with an electric registering device, particularly for

watermarked paper. Papier, carton et cellulose 1, no. 4: 79 (September-October, 1952). [In French]

A machine for cutting paper with the watermarks in exact register, the photoelectric registering device, and the method for correction of nonuniform distances are described. E.S.

MACHINERY—DRIVE, ELECTRIC

McLAREN, A. C. A modern cylinder machine wet-end helper drive at The E. B. Eddy Company. Pulp Paper Mag. Can. 54, no. 4: 117-20 (March, 1953).

When it was decided to install a suction drum roll and a new primary-press section on one of the cylinder machines of The E. B. Eddy Co. making a very diversified range of paperboards, steps had to be taken to provide a better means of helping or relieving felt tension. Small helper motors were applied to the suction drum roll, to two bottom and two top primary press rolls, and to two cylinders. The operation of the paper-machine drive, including protective measures, and the constant-current, amplidyne regulating system are described in some detail. 5 figures. E.S.

TIPKA, JAMES. Outline for a felt control program. Tappi 36, no. 4: 129-30A (April, 1953).

Suggestions for an effective program for increasing felt life and performance are given. E.S.

MACHINERY—MIXING APPARATUS

RUSHTON, J. H., and OLDSHUE, J. Y. Mixing—present theory and practice. Chem. Eng. Progr. 49, no. 4: 161-8 (April, 1953).

The theoretical and practical aspects of the mixing of fluids of relatively low viscosity are discussed. Flow patterns produced by mechanical agitation are illustrated and the theories of modern fluid mechanics (velocities, viscosity and shear stress, laminar motion and turbulence, momentum transport) are reviewed. Turbulence, entrainment, diffusion and mass transfer, dissipation of energy during flow, similarity concepts, mechanics of flow in mixing tanks, and the power characteristics of mixing impellers are discussed with their pertinent mathematical equations. A list of letters and mathematical symbols with definitions is appended, and the related units are given. 2 tables, 9 figures, and 31 references. R.C.R.

MACHINERY—MOISTENING DEVICES

DILTS MACHINE WORKS, *Fulton, N.Y.* [Dilts moisture applicator] Tappi 36, no. 4: 112-13A (April, 1953); Am. Paper Converter 27, no. 4: 33 (April, 1953).

Mounted on the upper portion of the calender frames and driven by the top calender roll, this compact, three-roll, self-contained unit applies a controlled amount of moisture between 3 and 11% with a tolerance of 0.5% to the web, thereby eliminating separate operations required to add moisture to a sheet ready for calendering. The installation is made at no sacrifice to calender speeds. 2 figures. E.S.

MACHINERY—PACKAGING MACHINERY

MONTAGNAN, R. Packaging machinery. Papier, carton et cellulose 1, no. 5: 52-7 (November-December, 1952). [In French]

Different types of converting and packaging machinery are described, including machines for bagmaking, folding boxes, setup boxes, tube winding, and molded pulp articles, as well as wrapping, pasting, and assembling machines. 10 illustrations. E.S.

MACHINERY—PAPER MACHINE

PITKÄNEN, E. J. The new kraft paper machine of the Kotka Mills of Enso-Gutzeit Osakeyhtiö. Finnish Paper and Timber 4, no. 1: 4 (February, 1953); Paper and Timber 35, no. 3: 82-3 (March, 1953). [In English and Finnish]

The first of two new paper machines started to operate in January, 1953; the machine was built by Beloit Iron Works, and the drive was supplied by Westinghouse. The trimmed width of the machine is 5.2 m., its maximum speed 2000 f.p.m., and the daily output approximately 200 tons/24 hours. 2 illustrations. E.S.

SCHMIDT, KARL. Construction data for high-speed paper machines. Das Papier 7, no. 5/6: 77-82; no. 7/8: 120-7 (March, April, 1953). [In German; English and French summaries]

The present trends for higher machine speed and production and the demand which they place on the individual units of the paper machine are discussed. Recent developments in stock mixing and flow from headbox to wire, sheet formation and drainage, drying, and surface treatments on the machine (watermarking, size presses, and supercalenders combined with the paper machine) are reviewed. 2 tables, 16 figures, and 12 references. E.S.

MACHINERY—PULPERS

COOK, HILLIARD D. The Aquapulper and Beatapulper, a performance report. Pulp Paper Mag. Can. 54, no. 4: 108-16 (March, 1953); Paper Mill News 76, no. 20: 82, 86, 88, 90, 92-3 (May 16, 1953).

A new type of pulper and pulper-refiner combination is described together with comparison data showing the relative efficiency of these units against standard equipment. The Aquapulper is a side-drive pulper with a special impeller and tub designed to promote efficient pulping. The Beatapulper is an Aquapulper fitted with refining elements so that pulp can be slushed, defibered, and refined in the same unit. Test data show that the Aquapulper is comparable in efficiency to standard pulpers and that the Beatapulper is comparable to a system having a pulper and refiner and that its efficiency is much greater than that of a standard Hollander beater. In addition to descriptive information, illustrations show the construction of the units; comparative curves based on standard test data are included. 6 tables and 13 figures. E.S.

MACHINERY—REFINERS

SHOUVLIN, ROGER J. Disk refiners for production of pulp. Paper Mill News 76, no. 12: 100, 124 (March 21, 1953).

The design, operation, and applications of different types of Bauer disk refiners are discussed briefly; their increased use in the field of semichemical pulping is pointed out. 4 illustrations. E.S.

THORSEN, G. Conical and disk refiners of different constructions. Papier, carton et cellulose 1, no. 6: 61-5 (January-February, 1953). [In French]

With the use of diagrams, the author describes the classical jordan, the Marchal, Hydrafiner, Miami, Claflin, and Jones refiners, and the Morden Stockmaker (conical refiners), as well as the Kingsland, Bertrams, Sutherland, Bauer, and Sprout-Waldron disk refiners, and the Asplund Defibrator. In conclusion, a brief comparison between beaters and refiners, particularly with regard to power consumption, is made. The great variety of stock-preparation equipment available to the papermaker permits him to make a suitable choice for the treatment of any type of stock. 12 diagrams.
E.S.

MACHINERY—SCREENS

HUBERTY, A. W. Up-flow screening of chemical pulp. Paper Mill News 76, no. 12: 93-4, 96, 98 (March 21, 1953); Yearbook Am. Pulp Paper Mill Supts. Assoc. 33: 273, 275, 277, 279 (1952); *cf.* B.I.P.C. 21: 97.

The construction and operation of the Swedish Ahlfors screen with slight modifications to conform to American practice are described. The screen employs a new principle—i.e., the upward flow of fiber through the screen plates. Data on the performance of the screen with bleached and unbleached kraft and unbleached sulfite pulp are given. 3 tables and 8 figures. E.S.

MACHINERY—SHEET TRANSFER

HORNBOSTEL, LLOYD. Automatic sheet transfer from wire to press on a Fourdrinier. Tappi 36, no. 4: 145-7 (April, 1953).

The speed of the open-type paper machines is limited by safety of operation at the draw between the suction couch and the first press felt; the maximum safe speed is a function of the basis weight. The conventional pick-up-felt operation eliminates this limitation but is deficient in that excessive water is carried to the press section, sheet strength is damaged, some fiber is left behind on the Fourdrinier wire, and new clothing sometimes necessitates reduced machine speeds. A suction pick-up arrangement was installed at Beloit Iron Works as an experiment in 1931 and 1932; recently improved types operate successfully at speeds in excess of 1900 f.p.m. The advantages of this automatic transfer equipment (covered by numerous U. S. and foreign patents, issued and pending) in newsprint mills include possible increases in production of existing machines of approximately 35%, the provision of a better grade of paper with improved printing characteristics because of a higher groundwood percentage in the furnish, a reduction of paper breaks of at least 75%, and a reduction of the chemical pulp in the sheet from 20 to around 10%. 5 figures. E.S.

MACHINERY—SPEED REGULATORS

FISHER, M. H. Magnetic amplifiers in paper mill controls. Paper Ind. 34, no. 12: 1450-3 (March, 1953).

The construction and method of operation of rotating speed regulators with magnetic amplifiers are described; their application to the sectional drive of the paper machine proper, supercalenders, and winders is outlined. 12 figures. E.S.

MACHINERY—STEAM TRAPS

WALTER, LEO. Things to know about steam traps. Can. Pulp Paper Ind. 6, no. 3: 10 (March, 1953).

The author describes the two principal groups of steam traps (mechanical and thermostatic) and their correct applications for different conditions.
E.S.

MACHINERY—VORTEX-TYPE DIRT SEPARATOR

ANON. Centrifugal pulp cleaning saves cost of new screening and riffling building for pulp mill. Chem. Processing 16, no. 4: 8-11 (April, 1953); *cf.* B.I.P.C. 23: 336-7.

The Centri-Cleaner installation in the soda mill at the Cornwall Division of Howard Smith Paper Mills Ltd. is described. 2 illustrations. E.S.

MACHINERY—VORTRAP

FREEMAN, HORACE, and BOADWAY, JOHN D. New methods for the removal of solids and gases from liquid suspensions with particular reference to pulp stock conditioning. Pulp Paper Mag. Can. 54, no. 4: 102-7 (March, 1953); Paper Mill News 76, no. 20: 74, 76, 78, 80 (May 16, 1953); Tappi 36, no. 5: 236-40 (May 1953).

One of the latest refinements practiced in papermaking is the removal of gas from stock. Gas in stock exists in three states: as bubbles, as gas in solution, and as gas adsorbed on fibers. The gas as bubbles is harmful as it acts to float and flocculate fiber and pitch. To ensure that bubbles are removed and that they have no chance to reform, it is necessary to remove a considerable portion of the total gas. It has been found that by redesign the Vortrap, used throughout the paper industry as a centrifugal dirt separator, may be applied to remove simultaneously both gases and dirt. This is achieved by increasing the fluid velocity within the separating tube so that a vacuous core is produced, to which gases are displaced by centrifugal force and from which they may be removed by a vacuum pump. 4 tables, 4 figures, and 2 references. E.S.

MAGNETS

ERIEZ MANUFACTURING COMPANY, *Erie, Pa.* Survey shows tramp iron damage costs $2,400,000 a year in paper industry. Paper Mill News 76, no. 12: 108 (March 21, 1953).

The four types of permanent (nonelectric) magnetic separators—i.e., magnetic pulleys, magnetic drums, plate-type magnets, and magnetic humps or traps—and their applications are described briefly. A diagram is included which shows the damage cost of ferrous contamination to different types of papermaking machinery; chippers are the most seriously affected equipment. 1 graph. E.S.

METERS AND RECORDERS

GAVELIN, GUNNAR. A new paper-machine draw and speed recorder. Svensk Papperstidn. 56, no. 6: 240-1 (March 31, 1953). [In Swedish] *cf.* B.I.P.C. 22: 112.

Reference is made to a new frequency-type speed recorder and the method devised and described by E. H. Snider for the continuous measurement of the draw speed of paper machines. E.S.

OLIVER, MURRY L. Quality control of rosin size emulsion solids by automatic emulsion machines. Southern Pulp Paper Manuf. 16, no. 4: 76, 78 (April, 1953).

The possibilities of indicating and recording conductivity instruments for controlling the output of automatic emulsifier machines to produce a uniform rosin-size emulsion are discussed. 3 figures. E.S.

SCHUESSLER, RAYMOND. Tensiometer increases Glatfelter production. Paper Ind. 34, no. 12: 1463-4 (March, 1953); *cf.* B.I.P.C. 22: 921.

The tensiometer installed at the calenders in the plant of the P. H. Glatfelter Co. at Spring Grove, Pa., its construction, mode of operation, and resulting advantages are described. 5 figures. E.S.

MICROSCOPY (ELECTRON)

MERING, M. Use of the electron microscope in colloid chemistry. Assoc. tech. ind. papetière, Bull. no. 1: 26-7 (1953). [In French]

The possibilities of the electron microscope in cellulose chemistry are discussed very briefly. L.E.W.

MILL MANAGEMENT

BRISSIER, MAURICE. A study on the organization in paper mills. Papier, carton et cellulose 1, no. 6: 56-8 (January-February, 1953). [In French]

The author shows different possibilities for cost reduction without expansion or the installation of new machinery. Effective savings can often be realized by a rearrangement of machinery or flow of materials, mechanized handling equipment, close control of waste, and by securing the co-operation of the employees through the introduction of an efficient premium system. 4 illustrations. E.S.

KELLER, J. A. Job evaluation . . . preparing job descriptions and rating job requirements. Part 4. Paper Ind. 35, no. 1: 72 (April, 1953).

The fundamental rules for obtaining accurate job descriptions and establishing fair job ratings are discussed before these are used in building a wage and salary structure. 1 figure. E.S.

KELLER, J. A. Job evaluation . . . selection of plan to be used. Part 3. Paper Ind. 34, no. 12: 1459 (March, 1953); *cf.* B.I.P.C. 23: 491.

Of the four general types of job evaluation plans—i.e., job ranking, job classification, factor comparison, and point system, the point system is generally preferred and most widely used. To eliminate suspicion and mystery in a new system, management in announcing its job evaluation program should tell the employees that a point-system plan will be used and that copies of the plan will be available for their use and understanding. E.S.

MCGILL, L. S. Personnel development at Pacific Mills Limited. Pulp Paper Mag. Can. 54, no. 4: 90-4 (March, 1953).

The company has set up a training program for management, superintendents, and foremen. The program uses the conference method which allows all trainees to participate actively in helping to formulate and understand company policies; trainees learn leadership by taking turns at directing the discussions. The duties and authority of each managerial position are clearly defined, on-the-job instruction methods are standardized, and a training schedule is kept for each individual. The author stresses the need for top

management to engage actively in planning, motivating, and sharing the program with lower-level personnel. 7 charts. L.C.

MOLDED PULP ARTICLES

HAWLEY PRODUCTS COMPANY, *St. Charles, Ill.* Wet pulping with stabilized glass fiber adds strength to final molded product. Chem. Processing 16, no. 4: 52-4 (April, 1953).

A method for preventing the separation of glass filaments into strands on wet processing (the nature of the stabilizing Hawley process is not disclosed) permits pulp molding with glass fibers according to standard practice and results in products with increased strength. It has been found necessary to carry some cellulose fiber (20% cellulose to 80% glass fiber) as filler or extender; molding can then be carried out in the usual manner. The stabilized glass fiber can also be added to improve the strength properties of standard molded pulp articles and for producing high-strength paper. 1 table and 3 illustrations. E.S.

NEWSPRINT

ANON. The manufacture and consumption of newsprint in Japan. Svensk Papperstidn. 56, no. 6: 217-24 (March 31, 1953). [In Swedish]

This study is largely based on the publications of Murdock (*cf.* B.I.P.C. 18: 30; 20: 648); recent statistical data from "Newsprint data 1952" of the Newsprint Association of Canada are included. 3 tables, 1 map, and 6 illustrations, including a reproduction of one page of a Japanese newspaper. E.S.

NOMOGRAPHIC CHARTS

HAUGH, R. R. Safe storage R.H. and warmup. Food Eng. 25, no. 4: 74 (April, 1953).

A nomograph is presented from which it can be determined whether or not a safe transfer of fiberboard cases of food from a cold warehouse to a warmer transfer room or storage area can be made, or whether adjustments in temperature of either area or in the humidity of the warmer one have to be made. Directions for the use of the nomogram are given. 1 diagram. E.S.

PACKAGING

ANON. Packaging of nonfat dry milk solids. Am. Boxmaker 42, no. 3: 16-18 (March, 1953); Am. Paper Converter 27, no. 4: 25-8 (April, 1953); *cf.* B.I.P.C. 23: 492.

Materials for packaging nonfat dry-milk solids must meet exacting standards in regard to moisture-vapor permeability, elasticity range, odor transfer from the material, odor transfer through the material, and sealing. According to the Food and Drug Administration, the dry milk may at no time contain moisture in excess of 5%. The merits of the flexible film and paper package which is already in wide use are described, and glass containers, cannisters, and tin cans are also evaluated. The use of bulk packaging to promote the product for cooking only is feasible, since automatic filling equipment is available for the folding-carton bulk package, the bag-in-box package, the fiber can, and the flexible envelope. 2 illustrations in the first reference and 3 in the second; 7 footnotes in both. L.C.

ANON. Windows for ice cream. Modern Packaging 26, no. 8: 126-8 (April, 1953).

Richman's Ice Cream Co., Sharptown, N.J. has just begun marketing its full line of flavors in a new carton of regular waxed-paperboard construction with cellophane window die cut in the shape of a dish of ice cream and faced with 300 MSB-1 cellophane, a highly transparent film, durable at low temperatures and sufficiently moistureproof. Sales tests indicated that the window carton is not only feasible but desirable. 4 figures. E.B.

BERNOT, ANDRÉ. Impressions of the packaging team from the United States. Papier, carton et cellulose 1, no. 6: 52-5 (January-February, 1953). [In French]

Following the return of the French packaging team from the six-weeks trip sponsored by the Mutual Security Agency, a condensed review of the important impressions obtained by members is given, with particular reference to the reasons for the phenomenal growth and development of packaging in the United States and the possibilities for applying some of the methods to French conditions. E.S.

BERNOT, ANDRÉ. New and future outlets for paper and board. Papier, carton et cellulose 1, no. 5: 58-60 (November-December, 1952). [In French]

Examples of packages for milk, fruits and vegetables, bread wrappers, and military and export packaging are given. Future possibilities and expansion into new fields are mentioned. 8 illustrations. E.S.

BORDAT, R. Packaging in a state of transformation. Papier, carton et cellulose 1, no. 5: 46-8 (November-December, 1952). [In French]

Following a general discussion of the increasing application of paper and board in French packaging during recent years, the author discusses the principal types of paper packaging, including corrugated shipping containers; large sacks and medium- and small-sized bags; creped, tarred, and waxed paper; leakproof containers; gummed tape; labels; and cellulose wadding for packaging purposes. Although much progress has been made, the possible applications are by no means exhausted and the future of the packaging industry is bright. 2 tables and 3 diagrams. E.S.

BRADIE, ALEXANDER R. Stock designs spur matched packaging. Am. Boxmaker 42, no. 3: 14-15 (March, 1953); Am. Paper Converter 27, no. 4: 29-30 (April, 1953).

Small retailers and manufacturers, who cannot afford packaging materials in a private design, represent a prime market for matched packaging in a low-cost stock design. The paper converter can expand his printed packaging market by offering the small-volume buyer a choice of standard motifs in a variety of colors; some stock designs even allow the insertion of the customer's name and trademark. Standard design rollers are available for flexographic and rotary letterpress machines and are adaptable to the printing of bags, wrapping paper, and boxes. The steps in the manufacture of such design rollers are described briefly. 2 illustrations. L.C.

EASTON, W. H. It's in the bag. Du Pont Mag. 47, no. 2: 34-5 (April-May, 1953).

Some of the applications of Athalon polyethylene resin (I) to certain packaging problems are listed, with particular reference to envelopes of (I) laminated to cellophane for frozen citrus concentrate (*cf.* B.I.P.C. 23: 188), multiwall bags coated with (I) on the inside for the shipment of meat trimmings, and heat-seal pouches of (I) and foil for nonfat dried milk (*cf.* B.I.P.C. 23: 188). 9 illustrations. E.S.

INLAND WALLPAPER COMPANY, *Chicago.* Wallpaper, pretrimmed, pre-pasted, packaged. Packaging Parade 21, no. 243: 90-1, 100 (April, 1953).

To keep up with a trend toward "do-it-yourself" decorating, the Company merchandises a substantial volume of prepasted wallpaper. However, this created a packaging problem: in order to be ready for immediate use by consumers this paper must be pretrimmed as well as prepasted. Therefore, roll edges must be intact and free from damage and roll surfaces must be free of soilage. To give this degree of protection, a battery of wrapping machines is employed; the operations involved in wrapping the individual rolls in cellophane and packing the wrapped rolls in corrugated containers are outlined. 6 illustrations. E.B.

LAUTH, J.-P. Visits to different American enterprises which use large quantities of paper and board. Papier, carton et cellulose 2, no. 1: 57-8 (March-April, 1953). [In French]

Four American companies with large packaging programs in different fields and the reasons for their success are discussed: American Stores in Philadelphia (prepackaging of meat, fruits, and vegetables); Lily Tulip Corporation (service to restaurants, hotels, trains, etc.); Johnson & Johnson (medical supplies); and National Biscuit Co. (packaging for self service). 3 illustrations. E.S.

MICHIGAN MUSHROOM COMPANY, *Niles, Michigan.* One company's technique for prepackaging mushrooms. Packaging Parade 21, no. 243: 220-2 (April, 1953).

The Company prepackages its mushrooms in a 'Kliklok' style of carton, which is equipped with special locks so that the top and bottom do not get separated during handling. Another feature is the amount of play between the top and bottom members after the carton is locked into closed position to allow for different levels of volume. Because mushrooms give off moisture, the carton is waxed to prevent softening and is die cut for ventilation. 10 illustrations. E.B.

MODERN PACKAGING. Meeting the self-selling trends. Modern Packaging 26, no. 8: 115-20, 276, 280, 282 (April, 1953).

The results of a survey of 100 of the largest companies in the fields of foods, drugs, toiletries, and soft goods conducted to find answers to packaging problems are presented. It was found that much has been done to make the package attractive, but that there is considerable room for improvement in the field of protection, especially against shopwear and pilferage. The article deals mainly with the attempts made to make the package colorful, informative, interesting, and attractive. 18 figures and 5 references. E.B.

REVON, A. The viewpoint of a manufacturer of alimentary paste products, a large consumer of packaging materials. Papier, carton et cellulose 1, no. 6: 54-5 (January-February, 1953). [In French]

The author discusses packaging problems of a French manufacturer of macaroni and similar products, with particular reference to the need for better quality cartons and more stable prices. 1 illustration. E.S.

SCHOMER, H. A. Films for produce. Modern Packaging 26, no. 8: 191-6 (April, 1953).

The results of prepackaging studies made on 27 different perforated and nonperforated films conducted by the Bureau of Plant Industry, Soils and Agricultural Engineering are given; they show that no one film is superior to all others in preserving the quality of fresh fruits and vegetables, and that prepackaging does not markedly affect the sugar and vitamin content of the products studied. Adequate refrigeration and ventilation of the packaged produce were found to be more important than the type of film. As a consequence, the choice of film should be based on such factors as cost, transparency desired, permeability to moisture, breakage or tear strength, ease of handling, and adaptability to available equipment for packaging and sealing. Although produce may appear more attractive in sealed packages than in perforated ones, the quality in the former is often inferior because of objectionable odors and flavors. Refrigeration should be furnished as soon as possible after harvest and be extended throughout the marketing period. 4 tables, 8 figures, and 3 references. E.B.

PACKAGING—OPENERS

ANON. Downing first to make tear-strip boxes. Fibre Containers 38, no. 3: 92-3 (March, 1953); *cf.* B.I.P.C. 23: 565.

Downing Box Co., Milwaukee adopted the tear-strip method developed by Minnesota Mining and Manufacturing Co. and used by General Mills in its shipping containers for its pie-crust mix. A special machine for applying the pressure-sensitive filament tape which cuts cleanly through the sides of the carton was manufactured by the H. G. Weber Co. and installed at the Downing plant. The operation of the machine and the advantages of the tear-strip method are outlined briefly. 7 illustrations. E.S.

ANON. Pre-applied tear tapes. Modern Packaging 26, no. 8: 130-2 (April, 1953).

The well-known tear tape, formerly used only on machine-packaged items, is now a new convenience for manually filled cellophane bags. The pull tape is pre-applied down the side with the starting nick and tab on the bottom of the bag turnover. This tape may be incorporated right into the package design; it offers a quick opening device which leaves the bag intact so it may be re-used. 7 illustrations. E.B.

PAPER—COATED

ANON. Styrene-butadiene type latex upgrades paper coatings. Paper Ind. 34, no. 12: 1460-1 (March, 1953); *cf.* B.I.P.C. 23: 493-4.

The results obtained with styrene-butadiene type latex (Dow Latex 512-K) as a binder for coatings are described; the latest development is the use of these latexes in the size press. 1 illustration. E.S.

PAPER—FILLERS

ASSOCIATION TECHNIQUE DE L'INDUSTRIE PAPETIÈRE. Fillers.

Papier, carton et cellulose 2, no. 1: 61-2 (March-April, 1953). [In French]

The chemical composition and physical properties of the principal fillers used in papermaking, their retention and distribution in the sheet, applications for different purposes, and methods of identification are reviewed. 1 table and 12 references. E.S.

PAPER—MERCHANDISING

AMERICAN PAPER MERCHANT. The new Posner warehouse built especially for paper merchandising. Am. Paper Merchant 50, no. 3: 20-2, 54 (March, 1953).

The new one-story warehouse of S. Posner Sons, Inc., paper merchants, is described. A pneumatic tube intercommunication system, palletization, materials-handling equipment, and proper allocation of floor stock play important roles in maintaining an efficient flow of paper from mill to customer. The firm uses the Kardex system to keep a perpetual inventory as an aid to purchasing. To illustrate the effectiveness of the new facilities, an order from the time of its receipt in the Posner office to the time of its delivery to the customer is traced. 9 illustrations. L.C.

BLUM, PIERRE. The services which the paper merchant can render to the publisher. Papier, carton et cellulose 1, no. 4: 59-60 (September-October, 1952). [In French]

A brief economic study is presented to show the advantages of the services of a paper merchant to the publishing industry. E.S.

KNOX, ROBERT E. Team work between paper merchant and manufacturer pays off. Paper Trade J. 136, no. 12: 27-8 (March 20, 1953).

The author discusses some of the problems involved in the distribution of paper and the need for a better understanding between manufacturers and merchants of paper who frequently do not have sufficient knowledge of each other's business. Although the great gulf which existed between the two seems to be narrowing, there is still ample room for further developments. E.S.

SHARP, ANDREW G. Profits in specialties. Paper & Twine J. 27, no. 2: 9, 20-3 (April, 1953).

The author discusses the paper specialties produced by Kimberly-Clark Corporation and gives six reasons why every paper merchant can profit from handling paper specialties as well as standard items. He also presents six factors which the merchant must consider before invading the specialty market; these concern the selection of specialty items, a specialty-commodity balance, sales organization, sales training, sales-department operation, and the selection of a supplying manufacturer. L.C.

PAPER—SHEET FORMATION

SUNDSTRÖM, LARS. Some observations on the wire part of a paper machine. Paper and Timber (Finland) 35, no. 3: 79-81 (March, 1953). [In Swedish; English summary]

Following the conversion of a newsprint to a fine-paper machine for making woodfree machine-finish and supercalendered writing and printing

paper, formation and look-through of the resulting sheet were not satisfactory. In an effort to overcome this defect a number of observations and improvements were made; however, the author points out that these would not necessarily hold for other machines operating under different conditions. The difference in the rate of flow of stock and wire was found to influence fiber orientation to a considerable extent; formation, on the other hand was much less affected. A change in the arrangement of the equally spaced table rolls (putting them close together at the beginning and increasing their number from nine to 13 and spreading the final rolls farther apart) and the installation of a forming-board type doctor brought noticeable improvements. The sheet in passing through the dandy roll without special drive must have the exact required moisture content; if it is too wet, the fibers tend to adhere to the roll. If it is too dry, the dandy exerts no noticeable effect on the sheet. Driven dandies may be able to handle wetter sheets than nondriven ones. The results obtained with the dandy depend to a great extent on the nature of the stock; sheet formation may be improved by a change in beating degree. An increase in machine speed was found to have a decided beneficial effect on the look-through. 5 figures and 5 references. E.S.

WILLIAMSON, HARRY. Paper and paperboard making. XXV-XXVI. Practical examples of slice control. Paper Ind. 34, no. 9: 1117-19; no. 11: 1356-7 (December, 1952, February, 1953); *cf.* B.I.P.C. 23: 494.

The mixed volume of fiber and water delivered to the wire is controlled by the area of the slice opening. The author discusses the effects of a forward wave (resulting from a narrow slice opening) and a backward wave (resulting from a wider open slice) upon sheet formation on the Fourdrinier wire. The formation of creping tissue is discussed in detail as an example which embodies all the principles of formation from the positive and negative application of the forces within the control of the papermaker; it is the only standard commercial paper which must have the majority of fibers in alignment longitudinally and parallel to the travel of the wire. The effects of a number of variables on sheet formation are discussed in connection with this example, including consistency, machine speed, head height, delivery volume, length of wire, wire mesh, etc., and a method for finding the correct slice opening for a given set of conditions is outlined. 4 tables. E.S.

WILLIAMSON, HARRY. Paper and paperboard making. XXVII. Figures and comment on time rate of water drainage. XXVIII. Wire mesh drainage by number of openings per square inch. Paper Ind. 34, no. 12: 1461-2; 35, no. 1: 73-5 (March, April, 1953).

The factors affecting the time rate of water drainage from a Fourdrinier wire are described. In the first part the influence of weave (plain or twill) and the shape of the wires (round or flat) are discussed; in the second part the number of openings and the percentage of open area/sq. inch of weave are considered. The results of different wire and weave combinations are presented in tabular form. These articles conclude the present series of excerpts from the author's forthcoming book on all phases of paper and board manufacture. 11 tables. E.S.

PAPER AND PULP INDUSTRY

ANDREWS, PETER B. B. The 1953 paper situation. Am. Printer 134, no. 4: 30, 70 (April, 1953).

With material shortages in the pulp and paper industry substantially over-

come, supply and price prospects seem to be the most favorable in the past decade. The possibilities of bagasse as a printing paper base are discussed. E.S.

ANON. The Austrian paper industry. Svensk Papperstidn. 56, no. 6: 229-31 (March 31, 1953). [In Swedish]

Recent developments and expansions in the Austrian paper industry with the aid of the Marshall plan are described briefly. 3 illustrations. E.S.

DUPOUEY, MICHEL. The French book in the world market. Papier, carton et cellulose 1, no. 4: 65-8 (September-October, 1952). [In French]

Data on the exports of French books to different continents are given, and the possibilities for increasing the present amounts are discussed. 3 tables. E.S.

HOLLIER-LAROUSSE, J.-P. A study of the French book trade. Papier, carton et cellulose 1, no. 4: 49-50 (September-October, 1952). [In French]

The French book-publishing industry is discussed with reference to the types of books (classical, scientific and technical, religious, rare editions, and children's books) placed on the market. E.S.

ROUSSEAU, J.-R. The book and the paper. Papier, carton et cellulose 1, no. 4: 45-7 (September-October, 1952). [In French]

Statistical data on the types and quantities of paper used by the French book trade are given. 6 tables. E.S.

PAPER AND PULP INDUSTRY—EDUCATION

CHÊNE, M. Instruction in the French school of papermaking at Grenoble. Papier, carton et cellulose 2, no. 1: 71-2, 75 (March-April, 1953); Papeterie 75, no. 3: 155, 157, 159, 161 (March, 1953); [In French]

The requirements for admission and the curriculum for regular students (who study for the degree of engineer in the paper industry), special and foreign students (who are admitted to the courses without receiving a degree), technicians, and participants in short seminars at Grenoble are outlined. E.S.

PAPER AND PULP MILLS

MCPHERSON, JOHN A. Mosinee Paper Mills Co. modernization. Pulp & Paper 27, no. 3: 50-2, 54, 58, 60, 108-10 (March, 1953).

The seven-year modernization program of the Mosinee Paper Mills Co. at Mosinee, Wis. is described; the mill is the pioneer sulfate mill in North America and was built in 1910. The program included the complete modernization of the woodroom, enlargement of the pulp mill by the addition of two digesters, the installation of a new brown-stock washing system, a new 5000-kv.-amp. turbine and electrical distribution system, and the rebuilding of all three paper machines. The mill's daily capacity amounts now to 165 tons of special sulfate papers; 20% of the output is converted at the subsidiary Bay West Paper Co. at Green Bay (*cf.* B.I.P.C. 23: 423-4) into folded and roll towels, bath towels, and windshield wipers. 18 illustrations. E.S.

PAPER INDUSTRY. New St. Regis mill in regular production. Paper Ind. 35, no. 1: 60-5 (April, 1953); *cf.* B.I.P.C. 23: 568.

The new kraft pulp, paper, and board mill at Eastport on the outskirts of Jacksonville, Fla. is described. 6 illustrations. E.S.

PAPIER, CARTON ET CELLULOSE. Organization and productivity at Stenay-Pouilly. Papier, carton et cellulose 1, no. 5: 40-3 (November-December, 1952). [In French]

The layout for straight-line flow of materials in all operations of the two-machine paper mill of the Papeterie Stenay-Pouilly, the strict quality control over all phases of production, and the methods of fixing wages in accordance with increased productivity in the different departments are described. 1 flow-sheet and 7 illustrations. E.S.

PAPIER, CARTON ET CELLULOSE. Les Papeteries Lux. Papier, carton et cellulose 2, no. 1: 46-8 (March-April, 1953). [In French]

The off-machine coating mill of Les Papeteries Lux at Fures, near Grenoble, France and the principal installations are described. 7 illustrations. E.S.

PAPIER, CARTON ET CELLULOSE. A report on the mills of the Papeteries du Marais et de Ste-Marie. Papier, carton et cellulose 1, no. 4: 39-42 (September-October, 1952). [In French]

Following a brief historical introduction, the two mills of the company at Crèvecoeur (rags and waste paper) and the new straw-paper mill at Sainte-Marie are described; the former has three and the latter two paper machines. 9 illustrations. E.S.

PEARSON, TED. H & W expansion completed at Mobile. Paper Mill News 76, no. 14: 10-12, 16, 18-19 (April 4, 1953); *cf.* B.I.P.C. 23: 497.

An illustrated description of the expansion program of the company's pulp and paper mill at Mobile, Ala. is given. 14 figures. E.S.

PULP & PAPER. Hopper Paper Company . . . its expansion. Pulp & Paper 27, no. 3: 34-7, 39-40, 42, 44 (March, 1953).

The expansion program at the fine paper mill of the Hopper Paper Co., Taylorville, Ill. is described, including the installation of a new Moore and White Fourdrinier paper machine and auxiliaries; a completely closed white-water system is employed. The mill has now a daily capacity of 100 tons of offset printings, fine printings, index bristols, papeteries, box covers, and specialties. The raw material is purchased pulp, mostly bleached sulfite wood pulp, in addition to bleached kraft and rags. 23 illustrations of the equipment. E.S.

PAPER AS A TEXTILE MATERIAL

KELMINSON, DANIEL. More paper twine outlets. Paper & Twine J. 26, no. 12: 31-3 (February, 1953); *cf.* B.I.P.C. 23: 428.

The author discusses some of the principal uses and outlets for coarse and fine kraft cords, colored paper yarns, twisted yarns, oval-shaped cords, and paper-welting cords, including their application in the manufacture of automobiles; automobile seat covers; mesh and multiwall bags; carpet backings;

electrical cables, cords, and wires; electrical parts and appliances; furniture; luggage; porch rugs; and shoes. L.C.

PAPER SPECIALTIES

ANON. Chemically pure paper product. Can. Chem. Processing 37, no. 4: 64 (April, 1953).

The manufacture of vegetable parchment, its properties and manifold applications, particularly in the food-packaging industry, are described briefly. 1 illustration. E.S.

ANON. Paper milk containers hit new all-time record. Boxboard Containers 71, no. 724: 30-3 (April, 1953).

An estimated 8.5 billion single-service paper milk containers were produced last year, and the demand for them is continuing to rise. The merchandising advantages of the disposable milk container are presented, and the American Can Company's manufacturing process is described briefly. The containers are made from virgin-pulp paperboard coated with odorless, tasteless paraffin and sealed with a thermoplastic adhesive. 9 illustrations. L.C.

ANON. Poly-lined glassine. Modern Packaging 26, no. 8: 133 (April, 1953).

A new polyethylene-lined glassine paper, a special combination of 1-mil extruded polyethylene coating on 25-lb.-basis-weight, oilproof, anticorrosive glassine paper with a finished basis weight of 40 lb. to 500 sheets 24 × 26 inches, has been developed and is currently being used for packaging ball bearings. Its protective properties and machineability are stressed. 1 illustration and 2 references. E.B.

ANON. Pre-combined ham wrap. Modern Packaging 26, no. 8: 134-5 (April, 1953).

A triple-wrap combination consisting of an inner wrapping of glassine, a middle sheet of absorbent paper, and an outside sheet of printed moisture- and grease-resistant paper is factory assembled, cut, printed, gathered into units, and joined to make a precombined ham wrap. Its use, cost, and labor-saving characteristics are discussed. 3 illustrations. E.B.

BOSSHART, F. Paper and the printer. Papier, carton et cellulose 1, no. 4: 54-5 (September-October, 1952). [In French]

The requirements of paper for different printing processes, and the need for exact specifications and co-operation between printer and papermaker or -merchant are stressed briefly. 2 illustrations. E.S.

BROUTY, FERNAND, and FAYARD, JEAN. Paper, the No. 1 public friend. Papier, carton et cellulose 1, no. 4: 51-3 (September-October, 1952). [In French]

Having been asked the reason for the increasing prices of books, the authors stated that many factors were responsible, including the rising cost of paper. Whereupon the inquirer exclaimed: "Do you not find it scandalous that a materialistic object like paper should have such a pronounced influence upon spiritual matters as thoughts?" Paper may amount to as much as 50% of the price of French books (in 1951, the price of French book paper was nearly double that of American-made paper). Publishers are anxious for lower paper prices, because the dissemination of thoughts depends upon paper;

it would be tragic if reading would become an extravagance which the public can no longer afford. 10 figures. E.S.

DAVIDSON, P. B. From art to science in envelope manufacturing. Am. Paper Converter 27, no. 3: 20-2 (March, 1953).

Problems involved in the manufacture of envelopes are discussed, including dextrin-remoist and body-seal gums applied to the flaps as adhesives and the formation of good seals, and the paper from which the envelopes are made. The importance of sufficient moistening of remoist gums is emphasized. The discoloration of body-seal gums during hot humid summer weather may be overcome by the correct selection of fluidifying agents, particularly by the replacement of sugar cane with formamide or the amide of gluconic acid. Possibilities for improving the interfacial surface tensions and, hence, the adhesive properties between the gum and the envelope paper are mentioned. Reference is made to the white-spot problem in the blueprint-paper industry, which could be solved by the addition of cationic wetting agents to the glue-sized paper, whereupon complete coverage of the base paper with the coating solution resulted. A more satisfactory method was the regulation of the pH of the glue size. Glues near the isoelectric point allowed bad white spotting, whereas those on either side of this point were progressively better, the farther the pH was from 4.7. It was also found that papers which were white spotted produced a contact angle of over 30° with water; if the contact angle was lower than 30°, white spotting did not occur. No comparable study has been made with the effect of the surface-size pH on envelope-gum adhesion beyond the fact that envelope blanks sized with glues of widely different pH (5 and 8.5) were gummed with the same dextrin. The envelopes made from the paper at the higher pH values had better adhesive properties. However, the application of controlled pH of glue size to envelope paper has more theoretical than practical application, because most bond and writing papers are now surface sized with starch. E.S.

GOUX, ANDRÉ. The distribution of wrapping papers. Papier, carton et cellulose 1, no. 5: 51 (November-December, 1952). [In French]

Problems in the distribution of French wrapping papers and possible solutions are discussed. E.S.

MARTIN, G. The manufacture of condenser paper. Papier, carton et cellulose 2, no. 1: 68-70 (March-April, 1953). [In French]

An outline of the important factors in the manufacture of condenser paper which requires painstaking procedures throughout all operations to insure uniformity of the product and absence of defects is given. Most condenser papers are nowadays made from pure chemical pulps. The paper is dried under a vacuum prior to impregnation with a suitable insulating liquid. The principal requirements of a satisfactory condenser paper are uniform thickness, high mechanical and dielectric strength, high power factor, a pH between 7 and 8 in the finished paper, the absence of porousness and even the tiniest pinholes, and the absence of folds and traces of folds which requires particularly careful winding operations. 4 illustrations. E.S.

PAPER SALES. New products review for 1953. Paper Sales 13, no. 3: 12-17, 44, 46, 48, 50-5 (March, 1953); *cf.* B.I.P.C. 22: 600.

New paper products which were introduced this spring by mills and converters are described. 31 illustrations. L.C.

PAPIER, CARTON ET CELLULOSE. A visit to the Establissements Trentesaux-Toulemonde. Papier, carton et cellulose 1, no. 6: 48-51 (January-February, 1953). [In French]

The converting operations at the plant at Tourcoing of the Société Trentesaux-Toulemonde are described; the principal products are waxed papers for different branches of the food industry (dairy and bakery products, chocolates, confections, etc.). 13 illustrations. E.S.

PRICE, ARTHUR. New bactericidal and fungicidal papers may start new market trend. Paper & Paper Products 94, no. 15: 1, 10-11 (April 20, 1953).

Reference is made to the treatment of paper toweling with quaternary ammonium chloride (I) or an equivalent chemical compound for bacteriostatic and fungistatic properties. The paper was originally developed for the Armed Forces for medical purposes (a fresh sheet of creped paper toweling 18 inches wide is rolled across the examination table for each new patient); the technique is now being applied to ordinary paper towels for household and industrial use under the trade name Hygeia (General Paper Corp.) and for facial tissue under the trade name Yes (Johnson & Johnson). Although the fungistatic properties of the paper have not yet been exploited, one maker of fruit wrapping is planning to make and market this type of paper. Many other possibilities exist, such as diapers, food-bag linings, paper sandals for locker rooms, bibs for dental and medical supply, etc. The treated paper is softer and also has dust-repellent properties; a product is on the market for this characteristic alone. Methods of application of (I) are still under investigation to find the most effective procedure; they include addition of (I) to either beater or headbox or spraying in the form of a solution through a shower pipe after the press section and before the baby drier. 1 illustration. E.S.

SPALDING, JOHN. The manufacture and use requirements of bread wraps. Tappi 36, no. 4: 132-3A (April, 1953).

The manufacturing and converting operations, including printing, plasticizing, calendering, and waxing for making breadwrappers from sulfite stock are outlined. Functional and merchandising requirements are discussed. The former include sufficient strength in handling, no blocking in storage, the absence of odor, good sealing strength and sealability, and adequate protection of the bread from loss of moisture; the latter cover appealing smooth glossy appearance, high brightness and opacity, uniform look-through, and softness to touch, lest it destroy the impression of freshness when the loaf is grasped. E.S.

THILMANY PULP & PAPER COMPANY, *Kaukauna, Wis.* New reinforced wrapper eliminates stain, 'offset,' is puncture-proof. Packaging Parade 21, no. 243: 174-5 (April, 1953).

Thilco-Tuf, a new laminated protective reinforced wrapper developed primarily to eliminate dangers of stain and offset frequently resulting from asphalt or similar laminants, is a recent entry into the industrial packaging field; a special nonstaining laminant is used in the manufacture. The structure, advantages, and uses of Thilco-Tuf are described briefly. 4 illustrations. E.B.

WADE, C. E. Developments in decalcomania. Share Your Knowledge Rev. 34, no. 7: 15-16 (April, 1953).

Following a brief historical introduction on the decalcomania process, the author discusses the special base paper on which its success largely depends. There are two kinds of decalcomania paper, simplex (I) and duplex (II). (I) is a single sheet of paper with a water-soluble dextrin coating. (II) is a heavy backing sheet with a thin coated tissue laminated to it. This paper is possibly one of industries' better kept secrets, as England today supplies the world with (II). Whereas (I) is successfully manufactured in the United States, all (II) paper is imported from England. (I) is used for window signs, trade marking, and decorative work, whereas (II) is applied to truck decals, furniture decorations, and a host of similar jobs. E.S.

WHEELWRIGHT, W. B. Here's the inside story on modern book papers. Inland Printer 131, no. 1: 35-7 (April, 1953).

The author discusses the limitations of machine-made book papers with regard to grain direction, furnish, thickness, coating, and high bulk, and the factors which have to be taken into consideration in planning the manufacture of a book. Modern book papers are aimed principally to satisfy typical printing requirements, too often at the lowest price and without the necessary regard for quality. 4 diagrams. E.S.

PATENTS

MAKARA, FRANK. The codified patent law of 1952. Tappi 36, no. 4: 158A (April, 1953).

The principal changes of general interest in the Patent Act of 1952 are reviewed. False marking of "Patent pending" when in fact no patent is pending is now punishable by fine. E.S.

PHYSICAL TESTING—FASTNESS TO LIGHT

ASHTON, DOROTHY, and PROBERT, M. E. A simple technique for investigating the effect of humidity on the fading and degradation of dyed fabrics by sunlight, and some observations on dyed cotton. J. Textile Inst. 44, no. 1: T1-11 (January, 1953).

Basic, azoic, and vat-dyed cotton cloths were tested. Results of the experimentation indicated that for a given exposure to sunlight, the rise in fluidity (used as a measure of the photochemical activity of the dye) of the basic dyed cloths increases steadily with humidity. Vat dyeings appear less active at 50% than at 0 or 100% R.H., but their extent of fading increases continuously with increasing humidity. Concurrent exposures of 46 vat dyeings at 10% and 90% R.H. show that the dyes differ very greatly in their response to humidity, both as regards fading and photochemical activity; these two properties are closely correlated at a given relative humidity. Similar experiments have been made with 38 azoic dyeings, several of which proved to be photochemically active at the higher humidity. As with the vat dyeings, the greatest activity was shown by dyeings that faded the most rapidly. 4 tables, 4 figures, and 13 references. R.C.R.

BOOR, LADISLAV, and TRUCKER, SEYMOUR L. An improved Fadeometer. ASTM Bull. no. 189: 38-43 (April, 1953).

Three of the important factors which determine the chemical changes associated with weathering are light, temperature, and moisture. In commercial machines designed to simulate outdoor weathering, these factors are not controlled to the degree of precision comparable to that of the various instruments now in use for measuring changes in such properties as reflectance and transmission. A weathering apparatus using the Atlas-type enclosed arc

as the light source has been built in which the temperature and relative humidity of the air in contact with the specimens are controlled and are variable over a wide range of ambient conditions. The design of the apparatus and the means of achieving control of these variables are described. The effect of varying ambient temperatures and relative humidity during fading tests on National Bureau of Standards paper 1554 are shown. Studies of fading rates made under the same variable conditions on textiles and plastics confirm the importance of close control of ambient temperature and relative humidity during light exposure. 4 tables, 11 figures, and 5 references. E.S.

LUDWIG, T. E., and BENSON, S. R. Lightfastness of printing ink pigments. Am. Ink Maker 31, no. 2: 34-7 (February, 1953).

The purpose of this investigation was the determination of the relative lightfastness of the various printing ink pigments, with principal emphasis on weak tints. Representative types of red, blue, yellow, orange, and green pigments were selected, and inks of three different concentrations (a deep shade and a strong and a weak tint) were prepared from each pigment. With these inks prints were made on coated paper on a Vandercook No. 4 proof press. Each print was exposed 70 hours on a Fade-Ometer; for those pigments which showed good lightfastness, separate 200-hour exposures of the weakest tints were made. The data on the lightfastness ratings were assembled and are presented in seven tables. E.S.

PHYSICAL TESTING—PAPER—FOLDING ENDURANCE

KÖHLER, SIGURD. The folding endurance of paper. Svensk Papperstidn. 56, no. 5: 157-72 (March 15, 1953). [In Swedish; English summary] *cf.* B.I.P.C. 22: 271.

The results of an extensive investigation on certain phases of the Kohler-Molins folding tester (I) with different machine-made papers (kraft cable paper, writing paper, bonds, tracing paper, and condenser paper) at the Swedish Government testing institute are presented. Following a brief description of the instrument and its mode of operation, the influence of the load on the test results is discussed. When the strip is folded over the edges without stretching or compression on the inside surface of the fold, an increase in length of the outer surface in proportion to the thickness of the paper will take place. Even the first foldings may cause ruptures on the outside surface of the fold, or creases may be formed on the inside surface, or both ruptures and creases will take place. Only very thin paper may be folded at very small loads without the occurrence of either type of fracture. The quality of the paper and the weight of the load determine whether ruptures or creases predominate during the first foldings. The values of the folding endurance (II) at this first stage are strongly affected by the magnitude of the applied load. With a heavy load (about 25% of the tensile strength), the tension in the fold produces ruptures even during the first foldings, whereas no or scarcely perceptible creases appear. Papers manufactured from the same pulp and under the same conditions, but with different thickness, have a (II) (determined at 800 g.) which decreases with thickness. When the load applied in each case is proportional to the tensile strength (e.g., 5% thereof) of the folded strips, the (II) will increase with decreasing thickness of paper, because the tension in the paper surfaces decreases with the thickness. (II) is usually determined at a constant load, i.e., 800 g.; other things being equal, the lower the tensile strength of the paper, the lower (II) will be. (II) of machine-made paper is as a rule higher in the machine than in the cross-machine direction, because the tensile strength is higher in the former than in the latter. If the test is performed at 5% of the tensile strength, the relationship between the directions is usually reversed—i.e., (I) is higher in the

cross-machine than in the machine direction, because the stretch of papers is higher in the former than in the latter. The method which the author recommends for comparing the (II) of different papers and in different directions is on the basis of the tensile strength which remains in the strips after, for instance, 1000 double foldings at a load of 5% of the mean tensile strength of the unfolded strips. The determination of (II) of the papers with folding edges of 0.05, 0.15, and 0.25 mm. radius of cross section has shown that the smaller the radius within the given limits, the lower are the values obtained for the number of double foldings at the same load. This decrease is unimportant at higher, but considerable at lower loads. The size of the folding angle affects the number of double foldings to the extent that a decrease of one degree in this angle causes, on the average, an increase of almost 2.5% in the number of double foldings for most types of paper. The investigated range was between 104 and 156°. In the range between 104 and 135° an even considerably greater increase was found in certain cases. 11 tables and 10 figures. E.S.

PHYSICAL TESTING—PAPER—GLOSS

ANDERSON, OSCAR, JR. B. & L. gloss as a routine control test. Tappi 36, no. 4: 130A (April, 1953).

The author describes the routine control tests used on supercalendered paper in the Hudson River mill of the International Paper Co. for measuring gloss and finish (smoothness and shininess of a paper surface) with a Bausch & Lomb glossmeter. E.S.

HARRISON, V. G. W., and POULTER, S. R. C. Gloss of papers. Nature 171, no. 4354: 651 (April 11, 1953).

An empirical equation is presented which defines a gloss number for paper in terms of instrumental reflection measurements at a specular angle of 45° and two other angles (0 and 40°). The gloss numbers so obtained are claimed to correlate well with the mean visual rankings of a large number of observers. Coated and uncoated papers differing widely in surface finish and color were investigated. 1 reference. K.C.H.

PHYSICAL TESTING—PAPER—GROUNDWOOD PERCENTAGE

NORDQVIST, N. The microscopic determination of mechanical pulp in newsprint and similar papers. Svensk Papperstidn. 56, no. 6: 225-8 (March 31, 1953). [In Swedish]

Oskarsson (*cf.* B.I.P.C. 22: 901-2) refers to the TAPPI Standard T 401 m-42 for the quantitative determination of sulfite and groundwood pulps in a sample. The limitations of this procedure are pointed out and preference is given to the method of the Central Laboratory in Finland described by A. Backman "The determination of chemical pulp in paper by measuring the fiber density" (*cf.* B.I.P.C. 4: 240). 3 photomicrographs. E.S.

PHYSICAL TESTING—PAPER—PRINTABILITY

KING, CHARLES F. Various methods for testing paper stock analyzed. Inland Printer 131, no. 1: 60-3 (April, 1953).

In an article by William Wass in *The British and Colonial Printer* for Jan. 6, 1953, Wass describes a number of empirical tests without elaborate equipment to show the comparative pick resistance, bursting strength, paper fluffing tendency, acidity, and oil absorption of stock; he admits that these tests do not permit a comparison between different printing establishments,

but will aid the printer in telling him whether or not the paper will work well in his particular shop. The present author describes these tests briefly with particular reference to the oil absorbency test. As in all these tests, a standard sample (preferably unprinted) is selected from stock which has run well on a previous order; the only equipment required consists of a small rubber roller and a glass plate. The oil used is a medicinal grade of paraffin or mineral oil. Strips of the standard and the unknown stock, each about one inch wide, are fastened side by side on the glass plate; the small roller uniformly covered with the mineral oil is rolled over the two strips of paper. The time required for the oil to disappear into each strip is noted. This gives the relationship between the standard and the sample of the stock being tested. The author emphasizes that it is necessary to make the comparison each time the test is made, because the penetrating time changes constantly with weather conditions and papers; no standards can be set up for future testing. E.S.

OLSSON, INGEMAR, and PIHL, LENNART. Ink transfer to representative groups of paper. Svensk Papperstidn. 56, no. 6: 197-201 (March 31, 1953); Grafiska Forskningslaboratoriet Medd. no. 31: 13-21 (January, 1953). [In English and Swedish; second reference with English summary]

Cellophane, glassine, supercalendered paper, and coated art paper were printed on a cylinder press, and the ink transfer to the paper was studied with different printing pressures, speeds, amounts of ink on the form, and viscosities of the ink. For all materials it was found that an increase in pressure and a decrease of printing speed and viscosity of the ink caused a higher ink transfer. No clearly defined interaction between any of the independent variables could be established, although it is possible that the experimental setup was not sufficiently sensitive for small variations. The percentage of ink which can be transferred from the form to the paper has a maximum at a certain value for the amount of ink on the form, which is characteristic for each type of paper. The ink transfer to cellophane and glassine paper is considerably smaller than to supercalendered paper. 3 tables and 4 figures. E.S.

PHYSICAL TESTING—PAPER—SAMPLING

ANON. Sample taking for paper testing. Assoc. tech. ind. papetière, Bull. no. 1: 27-8 (1953). [In French]

A preliminary draft for the withdrawal of samples from reams, rolls, or packages of paper for testing purposes is presented; when definitely accepted, it will be submitted to AFNOR (the French standardizing body) for further action. E.S.

PHYSICAL TESTING—PAPER—SIZE RESISTANCE

SÈVE, R. Contribution to the theory of the Carson test. Assoc. tech. ind. papetière, Bull. no. 1: 16-22 (1953). [In French]

The author discusses the Carson curl test for the determination of the sizing degree of paper. He presents a mathematical description of the curling phenomenon and obtains an expression for the curvature of the test specimen in terms of the modulus of elasticity, the thickness, and change in length per unit length upon swelling after water contact. If it is assumed that there is a sharp boundary between the zone of dry fiber and the zone of swollen fibers, the author's theory leads to the conclusion that the specimen curvature is maximum when the square of the ratio of the thickness of the dry zone to

the thickness of the wet zone equals the inverse ratio of the moduli of elasticity of the two zones. On this basis maximum curl occurs when the water has penetrated half-way through the sheet only if the moduli of elasticity of the dry and wet zones are equal. The author notes that there probably is a transition zone which separates the dry and the swollen zones, because the fibers do not swell instantaneously upon contact with the advancing water. Hence, the observed time for maximum curl is the sum of the time for water penetration and the time in which the fibers swell after being wet. Experimental data in support of the author's theory are presented; these include observations of degree of sizing and curvature for specimens conditioned at various relative humidities before testing. Both quantities decrease as the relative humidity increases. 1 table, 8 figures, and 4 references. G.R.S.

PHYSICAL TESTING—PAPER—TEARING STRENGTH

WAHLBERG, THOMAS K. Studies on tearing strength. Part II. The influence of stiffness. Svensk Papperstidn. 56, no. 5: 173-7 (March 15, 1953). [In English; German and Swedish summaries] *cf.* B.I.P.C. 23: 571.

When paper is torn in tear-strength testing, the central portions of the sample strip (lying close to the initial slit and the surface to be torn) are sheared between the two edges, so that a splitting of the sheet results; the stiffer the specimen, the higher is the degree of splitting which causes an increase in the tear resistance. A linear relationship seems to exist between tear strength expressed as tear factor and stiffness expressed as flexural rigidity. With the aid of regression analysis, an equation of the first order was derived between the two variables and tested, using different types of paper. The possibility of eliminating the dependence of the tear factor upon stiffness is discussed and some examples are given, in which this has been accomplished. The relationship between tear factor and flexural rigidity is of particular interest in the comparison of the tear strength of papers of different basis weight. 4 tables, 3 figures, and 10 references. E.S.

PHYSICAL TESTING—PAPER—WET STRENGTH

ALFTHAN, GEORG VON. A new apparatus for determination of the wet web strength of paper. Paper and Timber (Finland) 35, no. 3: 68-72 (March, 1953). [In English]

A new instrument for the determination of the wet-web bursting strength of paper (I) is described which is based on bursting an area of 1.2 inches in diameter by means of compressed air and measuring the bursting pressure in mm. of water. No rubber membrane is employed; the sheet itself forms the membrane. (I) can be used only in testing sheets of low air permeability with a dry-matter content (II) varying between 13 and 25%. Under these conditions an accuracy of $\pm 4\%$ can be obtained. The instrument is very sensitive to variations in (II). Details of the tester construction, its mode of operation, the procedure for making handsheets and determining (II), and the influence of different factors on the test results are described. In a comparison of the results obtained with (I) and Brecht's wet-web, tensile-strength tester, the bursting strength was found to be more sensitive to variations in the quality of the pulp. (I) is principally intended for the routine control of the wet-web strength of papers containing mechanical pulp (newsprint). 2 tables, 7 figures, and 14 references. E.S.

PAGE, PAUL L. Wet-strength test for hanging stock. Tappi 36, no. 4: 128-9A (April, 1953).

A modification of a Cobb size tester is described which measures the soaking time required to allow a certain force to rupture a semiwet sheet; it simulates the operating conditions of the paperhanger who uses a pasted, soaked (5-10 minutes) wallpaper strip for hanging. This type of wet strength (I) is quite sensitive to variations in temperature and, to a much lesser extent, to moisture in the sheet; the testing of the conditioned samples should be carried out at standard conditions. (I) also changes with age; freshly made paper has a much lower (I) than paper a week old. Although the tester has certain disadvantages, it has been found useful as a control instrument, the results of which will correlate quite closely with end use and customer complaints. It does not replace a size tester which is still used in addition to (I). E.S.

PHYSICAL TESTING—STARCH

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Viscosity of starch and starch products. Tappi 36, no. 4: 139-40A (April, 1953).

The text of TAPPI Suggested Method T 637 sm-53 is presented which covers a method for measuring the viscosity of starch solutions or suspensions with a viscometer of the Corn Industries Research Foundation. The viscosity is recorded automatically as a graph which gives viscosity characteristics during any desired period of cooking and cooling. 1 table and 1 diagram. E.S.

PHYSICAL TESTING—TACK

BANKS, W. H., and MILL, C. C. Tacky adhesion—a preliminary study. J. Colloid Sci. 8, no. 1: 137-47 (February, 1953).

Tacky adhesion is related to the forces or energies involved in the separation of two surfaces in general closely separated by a film of highly viscous liquid. However, liquids normally do not sustain large tensions and rupture occurs at negative pressures of a few 100 atm. Thus cavitation is postulated as a possibility for limiting the speed of separation or applied force above which the flow conditions are not consistent with the Stefan equation. By sticking two smooth-ended brass cylinders together with liquid—with the uppermost cylinder suspended from a spring, and by adding weights to the lower cylinder, the force acting across the liquid film is determined by observing the extension of the supporting spring at rupture of the joint. The liquids used were mineral oil (1.2 poises), a solution of an ethylene glycol ester or rosin in linseed oil (approximately 75 poises), a glycerol phthalic anhydride condensation product (about 2200 poises), and a letterpress ink. All the liquids with the exception of the ink were Newtonian in behavior. The authors conclude that cavitation appears to be a possible limiting factor to the application of Stefan's law to explain tacky adhesion. Cavitation is also postulated as being manifested in the fernlike pattern (turkey tracks) which are characteristic of the rapid separation of two surfaces confining a liquid film (as in printing or coating operations). 3 tables, 3 figures, and 10 references. F.V.

PHYSICAL TESTING—TAPE TESTER

WILLIAMS, R. C. Harnden-McLaurin test (T 463-m-52). Tappi 36, no. 4: 120-1A (April, 1953).

The author criticizes the Harnden-McLaurin instrument for the testing of the adhesiveness of gummed tape, as specified in the TAPPI Tentative Standard T 463 m-52, because the results apply only to the conditions of force,

time, and deformation as they are related in the instrument; the relationship of these terms in the instrument is considered directly opposite to those conditions which determine the effective work of adhesion or pull resistance of the liquid adhesive. The Central Paper Co. has developed an instrument which tests the speed of adhesion of the gummed tape; the use of this tester is suggested as an improvement over the Harnden-McLaurin instrument. 3 references. E.S.

PITCH TROUBLES

MARTINSON, P. A. Pitch control with diatomite. Paper Mill News 76, no. 13: 14 (March 28, 1953).

The use of Celite diatomite powders for preventing pitch trouble is discussed briefly. 2 photomicrographs. E.S.

WARD, JOHN E. Nopco 1187-X pitch dispersant increases felt life, decreases down time. Paper Mill News 76, no. 13: 15 (March 28, 1953).

The use of the dispersing agent Nopco 1187-X for preventing pitch troubles on machinery parts and felts is described. E.S.

PLASTIC FILMS (NONCELLULOSIC)

MINBIOLE, R. J. Saran film . . . its development and applications. Am. Paper Converter 27, no. 3: 14-17 (March, 1953).

The physical and chemical characteristics of saran, a thermoplastic material with a high degree of flexibility and strength and a low moisture-vapor transmission rate, are reviewed. The films are tough, chemical and grease resistant, and printable by the conventional roll-printing methods. Packaging machines suited for handling saran films are described and evaluated, and the variations of one film type (517) are outlined. A table listing the electrical, optical, mechanical, thermal, and general properties of saran-film base types 517, S517 and M is included. 1 table and 11 figures. R.C.R.

POLYSACCHARIDES

VAN DER WYK, A. J. A., and SCHMORAK, J. A study on the existence of celluloses with branched molecules. Comparative viscometry of solutions of celluloses and starches. Helv. Chim. Acta 36, no. 2: 385-97 (March 16, 1953). [In French]

The authors have plotted the natural logarithm of the ratio of relative viscosity to concentration against concentration for a variety of celluloses of vegetable, bacterial, and animal origin and their esters, and have compared the resultant curves with corresponding graphs for amylose, amylopectin, and glycogen. The slopes of the curves for amylose and amylopectin differ in sign, and the authors conclude that this difference is due to the difference in molecular shape. Since bacterial and animal celluloses behave similarly to amylopectin, they infer a branched structure in these molecules. A very highly ramified structure is assigned to animal cellulose, in analogy to glycogen. These branches are fragile and easily destroyed by mild treatment with alkali, such as 1% at 100°C. in the absence of oxygen; the viscosity rises markedly during this treatment. 2 tables, 8 figures, and 37 footnotes. K.W.,Jr.

POPLARS

BØRSET, OLA. American poplar species and their significance for

Europe. Norsk Skogind. 7, no. 3: 75-81, 83-9 (March, 1953). [In Norwegian; English summary]

Based on an ECA study trip to the United States in the summer of 1950, the author—one of the six members of the "Poplar Mission"—discusses the distribution of American aspen and poplar species, breeding and hybridization experiments, diseases, utilization, and the possibilities for poplar cultivation on a large scale in Norway. 3 tables and 26 figures. E.S.

PRINTING AND PRINTER'S INK

LOWER, GEORGE W., WALKER, WILLIAM C., and ZETTLEMOYER, ALBERT C. The rheology of printing inks. II. Temperature control studies in the rotational viscometer. J. Colloid Sci. 8, no. 1: 116-29 (February, 1953).

The use of the rotational viscometer has become well accepted in fundamental studies of the rheological properties of non-Newtonian materials such as printing inks. It is very important, therefore, that the behavior characteristics of this instrument be well known. One of the most important variables in rheological studies is the temperature, since small temperature changes greatly affect viscosities. The present studies indicate that in previous work in this field this point has not been adequately treated. At low energy inputs, the viscometer bath itself is found to be effective in keeping the sample at constant temperature. In the medium range of 60,000-300,000 ergs/sq. cm./sec., the temperature can be controlled by lowering the bath temperature to keep the bob temperature constant. In the high range above 250,000 ergs/sq. cm./sec., the temperature can best be controlled by keeping the mean temperature of the cup and bob constant. These energy-input ranges are given per square centimeter of bob surface so that they can be related to various precision rotational viscometers. Contrary to previous findings reported in the literature, ordinary mineral oils, vegetable oils, and litho varnishes show no evidence of thixotropy when measured by the new technique. Furthermore, the equilibrium flow curves of several oil-based printing inks were found to be linear above the low stress range. Therefore, well-defined values of the plastic viscosity and yield value can be reported for such printing inks. 2 tables, 8 figures, and 10 references. E.S.

ZETTLEMOYER, A. C. Rheology of printing inks. I. Am. Ink Maker 21, no. 2: 31-3, 63, 65 (February, 1953).

In the printing process the rheological behavior of the ink at low shearing stresses is important in the fountain phase and the penetration phase, whereas the behavior at high stresses is important in the distribution and transfer phases. Since most printing inks exhibit thixotropic behavior of the plastic type, it is necessary to determine the entire flow curve. From this flow curve the plastic viscosity and the yield value can be obtained. These two constants help to characterize the system. The plastic viscosity and yield value describe the flow of the ink in all but the lowest stress range. The flow curve as determined with a precision rotational viscometer gives the equilibrium or thermodynamic properties of the system, although the lower extremity remains unknown. The kinetic flow properties involved in thixotropic breakdown and in elastic contributions to splitting are important aspects about which little is yet known; these characteristics are not rescaled by ordinary rotational viscometry. 1 table, 1 figure, and 15 references. E.S.

PRINTING AND PRINTER'S INK—ANILINE PROCESS

TUTTLE, DOUGLAS E. Flexographic printing inks. Am. Pressman 63, no. 4: 10, 12 (March, 1953); *cf.* B.I.P.C. 23: 119, 435.

The composition, physical properties, press manipulation, and applications of aniline printing inks are reviewed. E.S.

RADIOACTIVITY

WALTER, LEO. Use of radioisotopes in pulp and paper mills. Paper Ind. 35, no. 1: 75-6 (April, 1953).

Actual examples of isotope applications in pulp and paper mills are given; instruments for detecting radioactivity are discussed briefly. E.S.

RAW MATERIALS—NON-FIBROUS

POOR, E. N. TAPPI nonfibrous raw materials report—1952. Tappi 36, no. 4: 28A, 30A, 32A, 34A (April, 1953); *cf.* B.I.P.C. 22: 689.

Information on the availability, new uses, price changes, substitutes, and outlook for 1953 is presented for the following chemicals and nonfibrous raw materials used in the pulp and paper industry: sulfur, caustic soda, lime, sodium silicate, chlorine, sulfur dioxide, peroxides, animal glues, casein, starch, enzymes, zinc sulfide pigments, titanium pigments, alum, clay, dyestuffs, petroleum wax, wax sizes, sodium aluminate, bactericides, and plasticizers. E.S.

RESEARCH

CURTIS, FRANCIS J. More and better research. Tappi 36, no. 4: 12A, 14A, 16A, 18A (April, 1953).

Following a brief introduction on over-all research expenditures, possibilities in the paper industry and means for carrying on better research are discussed, with particular emphasis on the importance of organization and research personnel. E.S.

RESEARCH LABORATORIES

DÉRIBÉRÉ, M. The preservation of paper and wood and the institute of the pathology of the book. Papier, carton et cellulose 1, no. 4: 48 (September-October, 1952). [In French] *cf.* B.I.P.C. 22: 532.

A brief reference is made to the activities of the Italian Istituto di Patologia del Libro for the protection of books against the ravages of insects, micro-organisms, and other destructive agencies. 2 illustrations. E.S.

SAFETY

SCHWEISHEIMER, W. Electrical hazards in the pulp and paper industry. Pulp Paper Mag. Can. 54, no. 4: 184, 188 (March, 1953).

Injuries and fatalities caused by electric shock from both low- and high-voltage equipment are described, and precautions against shock are reviewed. In the event of electrical accidents, artificial respiration should be begun immediately; the new back-pressure, arm-lift method of inducing respiration is described in detail. L.C.

SALESMEN AND SALESMANSHIP

DAVIS, C. G. Stevens-Davis develops a successful method of training salesmen. Am. Paper Merchant 50, no. 3: 18-19, 50; no. 4: 20-1, 72 (March, April, 1953).

No matter how wisely a paper company selects its salesmen, sustained sales training after hiring is necessary to build and maintain an effective sales force. The Stevens-Davis "Men Who Sell" program is described in detail; it is designed to keep salesmen, veterans as well as trainees, informed of good selling ideas and market trends. This information is sent weekly to the homes of the salesmen; co-ordinated sales-meeting material is sent monthly to management. In addition, management may consult the Stevens-Davis research staff on anything pertaining to selling. 2 illustrations. L.C.

SEMI-CHEMICAL PULPING PROCESS

BROWN, K. J., and MCGOVERN, J. N. High-yield cold soda pulps and products from several woods. Paper Ind. 35 no. 1: 66-9 (April, 1953).

Hardwoods such as aspen (I), birch (II), red alder (III), sweet gum (IV), cottonwood (V), red (VI) and white (VII) oak, and mixtures of (III) and (VI) or (VII) oaks could be pulped by the cold soda process which entails steeping 1.5-2 hours at atmospheric pressure and room temperature with solutions containing 20-100 grams of sodium hydroxide per liter, resulting in a chemical consumption of 5-8% on the dry wood basis. Some hemicelluloses are lost, but there is little if any loss in lignin or α-cellulose. The softened chips are fiberized in an attrition mill. Yields range from 88-90%, and the resulting pulps could be bleached satisfactorily to a brightness of 65-70%. Bleached pulps from (I) were suitable for use in groundwood printing papers in laboratory paper tests, although additional printing tests are required for complete proof. Corrugating boards with high flat-crush resistance could be made from (I), (III), and (IV). At the same yield, (I), (II), (III), and (V) pulps are stronger than those from (IV), (VI), and (VII). Within the limits of the process, the pulp strength increases with decreasing yield. The strength also increases as the pulps are processed to lower freeness. Bark adversely affects the cold soda process and lowers pulp and board quality; softwoods (like jack pine and hemlock) are not satisfactorily pulped by it. 5 tables and 1 figure. L.E.W.

MCGOVERN, J. N. Semichemical pulping research at the Forest Products Research Laboratory. Paper Mill News 76, no. 12: 78, 124 (March 21, 1953).

The three major objectives of the Laboratory's research on semichemical pulping are: the application of the process to different woods, the investigation of the variables of the processes, and the development and demonstration of uses for semichemical pulps in different paper and board products. Past activities and results are reviewed briefly. A variation of semichemical pulping (the cold soda process), in which wood chips are steeped in sodium hydroxide solution and then mechanically fiberized, was recently developed; the possibilities of this new method are discussed. E.S.

SHIPPING CONTAINERS

BURNETT, E. N. Gerber's divisible case. Modern Packaging 26, no. 8: 148-50, 287 (April, 1953); *cf.* B.I.P.C. 21:190.

This article contains essentially the same information as given in the previous reference. 10 illustrations. E.B.

FIBRE CONTAINERS. Corrugated for Pacific Coast citrus. Fibre Containers 38, no. 3: 34, 36, 38, 43-4 (March, 1953).

New developments in the shipment of such perishables as citrus fruit in

corrugated boxes from southern California are reviewed. The box is made of double-face board; the corrugating medium consists of two thicknesses laminated together. A special slotted style with all flaps meeting at the center is employed; the box is coated on the inside with Phenodor (diphenyl compound with an odor-masking agent) to inhibit fungus growth. It will hold just half the volume of the old wooden box; the tare weight of two corrugated containers represents a saving of about 3.5 pounds as compared with one wooden box. The cost of the two containers is about 42 cents, a saving of 34 cents per box; in addition, mechanical sorting and packing of the fruit can be employed. The potentialities of corrugated shipping containers for other perishables (also in other states shipping such produce) are discussed, with particular reference to the vacuum cooling process and the new Tilly-closure technique, which permits easy opening and reclosure of boxes for inspection. The prediction is made that corrugated shipping containers will entirely replace wooden containers for shipping perishables in the near future. 11 illustrations. E.S.

SHIPPING CONTAINERS—AIR FREIGHT

MIROUX, A. Packaging for air shipments. Papier, carton et cellulose 1, no. 5: 61-2 (November-December, 1952). [In French]

The possibilities for air shipment of perishables in light cardboard containers from North Africa to France are discussed, as well as means for making the consumer understand that a premium price is legitimate for the higher quality obtained. 3 illustrations. E.S.

SHIPPING CONTAINERS—MULTIWALL BAGS

AMERICAN MAIZE-PRODUCTS COMPANY, *Chicago.* Bag flattener simplifies palletized handling of multiwall bags. Packaging Parade 21, no. 243: 170-2, 174 (April, 1953).

Palletized handling of multiwall bags is difficult because of the shifting nature of the material contained in these bags. The company discovered a means to accomplish such palletizing successfully by passing the filled and stitched bags through a bag flattener. The system used for this operation and the route of the bag from the time it is filled until it is unloaded from a railroad car are described. 11 illustrations. E.B.

UNION BAG & PAPER CORPORATION. Special coating makes multiwall bag 'non-skid.' Packaging Parade 21, no. 243: 228 (April, 1953); Chem. Processing 16, no. 4: 119 (April, 1953).

A nonskid multiwall bag has been developed; a special coating applied to the face and back of the bag during its manufacture give it an extremely high skid resistance. In laboratory tests with a tilt table the minimum slide angle for the nonskid bag was found to be 42°. 1 illustration. E.S.

SLIME PREVENTION

LANDBERGE, M. J. Pitch and slime control. Paper Mill News 76, no. 13: 17 (March 28, 1953).

Continuous dosages with Blancol for minimizing the deposition of pitchy masses between regular periodic cleanings are recommended. For the control of slime-forming bacteria, slug additions of organo-mercurials (Gallicide, Puratized SC or PMA) and Preventol GDC (a dichlorodiphenyl compound) will prove effective. E.S.

SANBORN, J. R. Deposits control. Paper Mill News 76, no. 13: 14 (March 28, 1953).

Causal agents of machine breaks are listed and the need for establishing the basic causes of accumulations is pointed out, so that the correct specific treatment for the elimination of troublesome deposits can be recommended. E.S.

R. T. VANDERBILT COMPANY, INC. Vanderbilt method of slime control. Paper Mill News 76, no. 13: 16 (March 28, 1953).

The application of the organomercurial type of toxicants (Merfenel), non-toxic slimicides (Vancides), dispersing agents such as Darvan and Nytal 200 talc, and different combinations of these reagents for the effective control of slime is discussed briefly. E.S.

SPONGES, ARTIFICIAL

ANON. Sponges from Canadian spruce. Pulp Paper Mag. Can. 54, no. 4: 121 (March, 1953).

Five photographs and a brief text illustrate various steps in the manufacture of dissolving-cellulose household sponges. L.C.

STEAM POWER

TAFT, CALEB S. Steam power generation. Tappi 36, no. 4: 130-2A (April, 1953).

The steam power plant of the Niagara Falls mill of the International Paper Co., a more or less typical pulp- and paper-mill steam plant, is described. E.S.

STREAM POLLUTION

BRUNEAU, LEIF. Some results of investigations of the water and estuarial bottom conditions on the coast of Ångermanland. Svensk Papperstidn. 56, no. 6: 204-13 (March 31, 1953). [In Swedish]

At the instigation of the department of fisheries, three series of investigations on the extent of water pollution in the vicinity of pulp mills in four different areas on the coast of the Swedish province Ångermanland were carried out in July and September of 1949 and in August of 1952. The principal purpose of the study was the determination of the distribution and flow of the pollution which could still be detected by ordinary hydrographic methods at any distance from the mill. Local conditions and the influence of sea-water currents are described in detail. Profiles comparing the conditions during 1949 and 1952 are included. In the surroundings of the mills at Köpmanholmen and Husum only a local pollution could be found, which was naturally strongest in the immediate vicinity of the mills and decreased rapidly toward the open sea water. Along the lower Ångerman River, pollution was found to be surprisingly low, particularly in view of the large number of mills located on this river. In the bay of Örnsköldsvik the situation had been quite serious in 1949; the surface water was strongly polluted and almost completely devoid of oxygen, particularly in the fall study. The 1952 pattern showed much better oxygen values in the surface water and a generally improved picture. This might have been a coincidence; however, other observations, for instance, improved salmon runs up the river, indicate

that the improvement is real and the result of the spent-liquor evaporation since then practiced in the mills of the Mo och Domsjö group. Based on the experiences gained in these investigations, similar studies are planned for the Skagerak in the summer of 1953 as a joint project of the fishery department and the pollution committee of the Swedish pulp mills. 8 figures. E.S.

MOGGIO, W. A., and GEHM, H. W. Pilot plant for treatment of kraft mill wastes. Sewage Ind. Wastes 25, no. 3: 305-10 (March, 1953); *cf.* B.I.P.C. 21: 271-2.

A pilot plant to investigate the feasibility of biological treatment of kraft mill wastes was constructed in Macon, Ga. and began operation in September, 1951; it was designed to test on a much larger scale the principles of biological treatment previously developed on a laboratory scale and to study the many variables involved in a process which is similar to the treatment of domestic sewage by activated sludge. Design features and operating details of the new plant are described. At present, waste waters to the plant originate at two sources, the total mill effluent and the evaporator hot-well water which are treated separately in the pilot plant. Operation is on a continuous 24-hour, seven-day per week basis. The plant's flexible design permits studies through a wide range of aeration periods, air quantities, nutrient requirements, and suspended-solids concentration. One operator, working only the day shift, operates the plant, runs the control tests, and maintains the records; during the two remaining shifts, the plant runs without an operator, but with periodic checking by the mill's personnel of the water-treatment plant. The information obtained will be used to determine the construction and operational costs of the process on a full-scale treatment basis. Operating and maintenance costs are shared by the National Council for Stream Improvement and the Macon Kraft Co. Financing of the construction was the joint undertaking of a group of southern kraft pulp and paper manufacturers. 2 tables, 3 figures, and 1 reference. E.S.

MURDOCK, HAROLD R. Industrial wastes; lagoons. . . . Ind. Eng. Chem. 45 no. 4: 105-6A, 108A (April, 1953).

The author discusses the correct application and limitations of the three types of lagoons in use—i.e., retention, absorption, and processing (aerobic, anaerobic, and chemical-treatment) lagoons. The successful operation of the anaerobic five-lagoon installation at the strawboard mill of Ball Brothers Co. at Noblesville, Ind. is outlined in some detail. 1 table. E.S.

NATIONAL COUNCIL FOR STREAM IMPROVEMENT. [Report for 1952] Tappi 36, no. 4: 163-6A (April, 1953); *cf.* B.I.P.C. 21: 583-4.

The research and development activities of the Council during 1952 are reviewed, including Oregon State College and Bates College (spent sulfite liquor), Louisiana State University (kraft mill wastes), Virginia Polytechnic Institute (semichemical wastes), Rutgers University (white water and rag, rope, and jute wastes), University of Michigan (stream analysis), Kalamazoo College (deinking mill waste), Purdue University (strawboard wastes), and The Institute of Paper Chemistry and Oregon State College (aquatic biology). E.S.

RUDOLFS, WILLEM, and HANLON, WILLIAM D. Color in industrial wastes. V. Chlorination for color removal. Sewage Ind. Wastes 25, no. 3: 314-24 (March, 1953); *cf.* B.I.P.C. 23: 441.

Studies to determine the effect of chlorination on the color and B.O.D. characteristics of industrial wastes (including rag cooking waste, gum wastes, spent sulfite liquor, and yeast wastes) and the influence of related factors on color reduction, show that the effectiveness of chlorination is dependent upon the pH of the waste solution, the form of chlorine, the contact time, and the loss of chlorine to the atmosphere. As a rule, color reduction by superchlorination is relatively low. 3 tables, 14 diagrams, and 3 references. E.S.

RUDOLFS, WILLEM, and HANLON, WILLIAM D. Color in industrial wastes. VI. Effect of biological treatment and activated carbon. Sewage Ind. Wastes 25, no. 4: 484-9 (April, 1953).

Laboratory studies were made to determine the effects of biological treatment and activated carbon on the color removal of industrial wastes (rag, rope, and jute cooking liquor, board-mill white water, spent sulfite liquor, gum, and yeast wastes). The following conclusions can be drawn from the results: The effect of biological treatment on the color characteristics varies with the type of waste and treatment. Activated carbon is effective for reducing the color of rag cooking liquor, gum, and yeast wastes, but not of spent sulfite liquor. 3 tables, 3 figures, and 1 reference. E.S.

VAN HORN, WILLIS M. Progress in stream improvement. Part 2. Problems resulting from sulfate, semichemical and straw pulping and deinking. Paper Ind. 35, no. 1: 70-1 (April, 1953); *cf.* B.I.P.C. 23: 672-3.

The problems arising in pulp mills and their mitigation or solution are discussed briefly, with emphasis on the reduction in B.O.D. demands. 35 references. L.E.W.

SUGARS

SAARNIO, JOUKO, and GUSTAFSSON, CHARLEY. On the dissolving and destruction of carbohydrates during the sulphate cook. Paper and Timber (Finland) 35, no. 3: 65-6, 78 (March, 1953). [In English]

Experimental sulfate cooks of pine- and birchwood indicate that the hexosans dissolved from the wood are rapidly destroyed by the cooking liquor. The dissolved pentosans, on the other hand, are more resistant and form the principal carbohydrate constituents in the cooking liquor, xylan in particular. However, after a cooking period of six hours, most of the pentosans dissolved from the wood are destroyed. In spent sulfite liquor, on the other hand, large quantities of monosaccharides (principally fermentable hexoses) are present which are slowly destroyed under the conditions prevailing in the sulfite cook. 2 tables and 6 references. E.S.

SULFITE PROCESS

ANDERSON, M. S., and MCKNIGHT, G. S., JR. Sulphate formation in sulphite pulping. Tappi 36, no. 4: 151-3 (April, 1953).

Studies of sulfate formation made in a sulfite mill operating on calcium-base liquors made from kraft sludge, show that the resulting sulfur loss may be of the order of 44 pounds per ton of bleached pulp. The majority of the sulfate formation occurs during the cooking process, and the catalytic effect of colloidal sulfur is believed to be responsible for about 40% of it. Serious scale deposition in the digester circulation lines was eliminated by a change from steam injection devices to bottom steaming. The conversion to sodium-

base acid reduced the sulfate formation by about 68%. 3 tables and 8 references. E.S.

SULFITE WASTE LIQUOR

ANON. From pollution to profit. Chem. Eng. 60, no. 4: 122, 124-5 (April, 1953); *cf.* B.I.P.C. 23: 509.

The recent engineering changes in the calcium lignosulfonate processing plant at Marathon's Chemical Division, Rothschild, Wis. are described briefly, and some of the resulting products are discussed. Essentially the same information as in the previous reference is given. 1 flowsheet and 1 illustration. E.S.

GAUVIN, W., and WINKLER, C. A. Bindarine as an addition agent in the deposition of copper. Can. J. Technol. 31, no. 4 and 5: 114-19 (April-May, 1953).

Bindarine (I), a by-product prepared from spent sulfite liquor, has been used extensively as an addition agent in the electrodeposition of copper and other metals. The authors studied the behavior of (I) as an addition agent in copper deposition and found that the lignosulfonate content of the product is responsible for its effectiveness. It seems to be adsorbed only to a small extent on a copper cathode. The presence of (I) in the electrolyte increases both the hardness of the deposited copper and the cathode polarization; however, these effects are smaller than when gelatin is used as the addition agent. 2 tables, 2 figures, and 16 references. E.S.

KLEINERT, THEODOR. Contribution to the utilization of spent sulfite liquor. Das Papier 7, no. 5/6: 82-7 (March, 1953). [In German; English and French summaries]

The precipitation of the organic substances and the waste sulfur in spent sulfite liquor or the slops from the manufacture of sulfite alcohol with caustic lime under pressure at 140-150°C. is discussed; the advantages of the process are outlined. The precipitate consists of approximately 67% organic substances (I), 15-17% calcium monosulfite (II), and the remainder ash. The sulfur from (II) can be recovered in the form of sulfur dioxide or sulfuric acid; (I) after deashing have thermoplastic properties and can be utilized, alone or with small additions of phenols or aldehydes, in the manufacture of plastics. After partial drying, (I) in combination with coal dust might also be used as a fuel. In view of the large quantities of (I) available, their conversion to fertilizers or soil conditioners offers the most promising outlet. On treatment of (I) with ammonia under certain conditions, products of high nitrogen (III) content are obtained which give off (III) slowly to the soil so that a long-lasting effect results. The agricultural-chemical behavior of these products (for which patents are pending) is at present being investigated in several places; as soon as definite results are available, a further report will be issued. 5 figures and 30 references. E.S.

MALCOVE, N. L. Burning of calcium base spent sulphite liquor. Paper Mill News 76, no. 12: 114-15, 130 (March 21, 1953).

The author summarizes the problems involved in the evaporation of calcium-base spent sulfite liquor under the four headings: collection, evaporation, and burning of the spent liquor, and elimination of the fly ash. Successful developments to date are indicated. 4 tables and 1 illustration. E.S.

VAN HORN, WILLIS M. Progress in stream improvement. Part 1.

The spent sulfite liquor problem. Paper Ind. 34, no. 12: 1456-8 (March, 1953).

The author describes recent developments in the successful disposal of spent sulfite liquor; only those are considered which have been proved either by full-scale commercial or at least pilot-plant operation, including evaporation and burning either with or without a change from calcium as a base; specialized fermentation, such as yeast production; use of the liquor in building and stabilizing dirt, sand, or gravel roads; further development in the utilization of lignin, for instance, in chemical or pharmaceutical products; and exploitation of the dilution method. The most suitable development for any one mill or condition can be determined only after a thorough assessment of the conditions in that mill. 1 illustration and 48 references. E.S.

VERMEIREN, TH. Conditioning liquids to prevent scale formation by means of intramolecular induction C.E.P.I. Assoc. tech. ind. papetière, Bull. no 1: 7-15 (1953). [In French] *cf.* B.I.P.C. 23: 551.

Following a brief discussion of hard water and heat losses resulting from scale, the author outlines the effects of magnetic fields, the vibration of which serves to prevent crystallization of dissolved salts which destroy intramolecular cohesion and which may gradually cause the breakdown of previously formed incrustations. The greater part of the article is devoted to a description of the author's automatic apparatus CEPI, its operation and uses in the pulp and paper industry, especially in the pretreatment of sulfite and alkaline cooking liquors, spent cooking liquors, bleach liquors, etc. to prevent the formation of harmful deposits on the surfaces of machinery. 1 table and 14 figures. L.E.W.

WILEY, A. J., SHERMAN, WALTER, BABLICK, GEORGE, RICE, NEAL, DICKERMAN, G. K., and COLLETT, GROFF. Spent sulphite liquor studies. IV. Use of spent liquor in reconditioning asphalt road surfaces. Tappi 36, no. 4: 162-5 (April, 1953); *cf.* B.I.P.C. 22: 360.

Reformation of worn asphalt or "blacktop" road surfaces has been found to be promoted by inexpensive applications of spent sulphite liquor during regrading operations. Practical road tests in Wisconsin have shown that secondary roads in advanced stages of raveling can be reworked with a grader to pulverize and redistribute the old surface material, after which spent sulfite liquor applications from tank trucks serve to accelerate the formation of a new, tight, bituminous-type surface within a few days under normal traffic. Such reformed surfaces, without use of new asphalt-binding material, have been observed to stand up well after a year of service in a northern Wisconsin winter and without apparent damage from spring breakup. Methods used in the road trials to date are described. Laboratory trials are being carried out to confirm the reformation characteristics of sulfite-liquor application to test material taken from old roads. Deformation and shear tests are in progress. Preliminary strength tests (Marshall stability) which have so far been completed, tend to confirm the experience of the road trials in terms of good load-bearing capacity. Some observers are of the opinion a transitional and preliminary softening reaction of the broken asphalt aggregate occurs after the application of spent sulfite liquor. Such a reaction might contribute in part to the reformation characteristics, but laboratory evaluation of this phenomenon has been difficult to carry out and to confirm. 6 figures. E.S.

SULFUR

GAMSON, B. W., and ELKINS, R. H. Sulfur from hydrogen sulfide. Chem. Eng. Progr. 49, no. 4: 203-15 (April, 1953).

A literature review on the conversion of hydrogen sulfide to elemental sulfur is given and the thermodynamics of the reaction is developed. Literature-suggested calculation techniques are critically evaluated and a new, relatively simple, trial-and-error procedure is outlined. Restrictions on the design of units for the conversion are reviewed and the Claus process, as well as the I. G. Farbenindustrie modification, is discussed. Original kinetic and yield data on the oxidation of both hydrogen sulfide and carbonyl sulfide are presented. 9 tables, 18 figures, and 16 references. R.C.R.

SULFUR DIOXIDE

CHEMICAL ENGINEERING. Hi-purity liquid SO_2 from roaster gases. Chem. Eng. 60, no. 4: 274-7 (April, 1953).

A pictured flowsheet of the absorption-desorption process for manufacturing liquid sulfur dioxide of 99.9975% purity from by-product roaster gases and dimethylaniline at the Selby, Calif. plant of the American Mining and Smelting Co. is presented. The process was developed and patented by E. P. Flemming and T. C. Fitt. 1 flowsheet and 7 illustrations. E.S.

WHITNEY, ROY P., HAN, S. T., and DAVIS, J. LAWLOR. On the mechanism of sulphur dioxide absorption in aqueous media. Tappi 36, no. 4: 172-5 (April, 1953).

The authors discuss the absorption of sulfur dioxide in several aqueous media of interest in the pulp and paper field. When the absorption is conducted in a packed tower, and interpreted in the light of the two-film theory, it is shown that the absorption mechanism varies greatly with the characteristics of the absorbent. For the sulfur dioxide-water system, both film resistances are known to be important. When the absorbent is a strongly alkaline sodium carbonate solution, the resistance is essentially all in the gas film. In sodium bicarbonate and sodium sulfite solutions, the controlling resistance shifts toward the liquid film. The implications of these conclusions in design are pointed out. 3 figures and 12 references. E.S.

TRADE-MARKS

WOODHAMS, ROBERT E. A trademark sketch for the industrial manager. Tappi 36, no. 4: 20A, 22A, 24A (April, 1953).

The author discusses frequently encountered trade-mark problems, such as the difference between a trade-mark and a trade name, the right to the exclusive use of a trade-mark, arbitrary trade-marks, improper similarity, and registration. E.S.

VANILLIN

PEPPER, J. M., and MACDONALD, J. A. The synthesis of syringaldehyde from vanillin. Can. J. Chem. 31, no. 5: 476-83 (May, 1953).

Syringaldehyde was synthesized in high yield from vanillin. Vanillin was iodinated to 5-iodovanillin which, in turn, was reacted with sodium methoxide in anhydrous methanol in the presence of a copper catalyst for one hour at 130°C. ± 4°. Yields of 95% are obtained. 2 tables, 2 figures, and 13 references. I.A.P.

VENTILATION

OREN, J. W., ROBINSON, H. A., and BERGEN, J. T. Some operating characteristics of a paper machine drier section equipped with forced ventilation. Tappi 36, no. 4: 159-63A (April, 1953).

The paper machine studied is housed in the same machine room as a second machine. Both are equipped with vapor-absorption air systems, panel-type hoods, and four exhaust ducts through the roof; no drier felts are present. They produce thick felt up to 50 caliper and are quite slow-moving by present-day standards. The drying capacity, particularly of the first machine, has been the limiting factor regarding production rates, and efforts have been made to increase the drying capacity since 1940. These changes have followed the usual order of vapor-absorption air systems, economizers, changes in condensate lines, etc. Although the average production was generally rising, variations became more and more pronounced; these did not show any pattern which might have suggested seasonal changes. It was decided that not one, but several factors occurred at one time which affected the machine speed, and an investigation of existing conditions was made. The results of these studies (which are described in detail) showed that any one of a dozen conditions, either apparent or hidden, can affect the drying rate to a great extent. In dealing with systems of forced ventilation, great care should be taken in placing the ducts, and periodic checks should be made to insure proper air flows. Felt temperature was found to be one of the major factors influencing the drying efficiency. A relatively small increase in the vapor-absorption temperature was found to increase felt temperature materially; it is therefore recommended that the vapor-absorption system should be run at as high a temperature as is economically feasible. With properly designed and operating ventilation systems, any number of machines may be placed in close proximity without affecting one another. 14 figures. E.S.

WAGES

POITOU-DUPLESSY, J. Wages in the French paper, board, and pulp industries. Papier, carton et cellulose 2, no. 1: 76-8 (March-April, 1953). [In French]

The evolution of the wage structure in the French pulp and paper industry is outlined. E.S.

WASTE PAPER

MAUDLIN, C. V. Waste paper needs stable prices. Paper Mill News 76, no. 12: 44, 133 (March 21, 1953).

During 1952, waste-paper consumption dropped 13.1% from that of the previous year. The basic problems of the waste-paper industry are the lack of a uniform diversified demand and the need for price stabilization. Past experience has shown that paper and board manufacturers prefer wood pulp to waste paper for certain furnishes when both are in ample supply. Since a continuation of the substantial increase in domestic wood-pulp productive capacity is indicated for the next few years, the development of new uses and an increase in present applications are considered possible solutions to the problems of the waste-paper industry. This is a national problem which the industry should not be expected to solve by itself; a start should be made immediately. The recent establishment of the Waste Paper Utilization Council (composed of representatives of paper and board mills, waste-paper dealers, and allied groups, such as resin and adhesive manufacturers, inkmakers, printers, and publishers) should contribute to the improvement in quality of waste paper offered on the market. E.S.

PERRY, HENRY J. Waste paper utilization problems. Paper Trade J. 136, no. 13: 14-15 (March 27, 1953); Fibre Containers 38, no. 4: 156-7 (April, 1953).

In discussing some of the problems of the paper-stock industry, the author emphasizes the need for better sorting and gives examples of preventable contamination, including careless sorting, tar or asphalt products, flying pasters and roll-splicing compounds, printer's waste, plastic adhesives and coatings, wet-strength papers and other impregnated stocks, etc. E.S.

WOOD OPERATIONS

ANON. Maine agreement—how it has operated. Pulp & Paper 27, no. 3: 66-7, 70 (March, 1953); *cf.* B.I.P.C. 19: 883.

The main features of the 10-year agreement for the management of woodlands, a joint enterprise of Eastern Corp. (holder of the exclusive pulpwood-cutting rights) and the Dead River Co. (owner of the timberlands), are discussed. A fitting tribute was paid to the companies, when recently Tree Farm awards were granted to them for outstanding management of over 100,000 acres of timberland. The first five years of the agreement ended in 1952; an amended management plan for the second five years is now in operation. The cutting budget is subject to review at the end of this period. 4 illustrations. E.S.

MERRILL, JULIAN H. Some aspects of a modern pulpwood logging operation. Pulp Paper Mag. Can. 54, no. 4: 132, 135-6, 139 (March, 1953).

The development of Forestville, the present center of the woods operations of the Anglo-Canadian Pulp and Paper Mills Ltd., and the activities of the different departments (woods operations, accounting, personnel, forestry, construction, and pulpwood purchasing) are outlined. E.S.

WORKMEN—REHABILITATION

MCRAE, D. D. How Ontario rehabilitates its industrially injured. Paper Trade J. 136, no. 11: 16-17 (March 13, 1953).

The workmen's compensation act of Ontario and its operation are outlined. In 1947, the board established its convalescent center at Malton, near Toronto, where the very best in medical and rehabilitation service to the injured workers is provided. The activities of the center are described. E.S.

Patent Section

Although the abstracts of the United States and Canadian patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and the* Canadian Patent Office Record, *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. In so far as possible, an attempt will be made to indicate patents issued in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies, and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets or over, the price is $1.00 per copy. Beginning with volume 21, the Canadian patents will be abstracted from the complete specifications.

ALUMINUM

MOFFETT, HOWARD J., and MCFARLAND, JOHN C. Sealed cooking container for comestibles. U. S. patent 2,633,284. Filed March 28, 1949. Issued March 31, 1953. 2 claims. [Cl. 229-2.5]

Frozen foods (particularly meats) packaged in panlike aluminum foil wrappers can be cooked and served in the foil. 3 figures. R.C.R.

BLEACHING

HELLER, HAROLD H., and SHIRRIFF, ROBERT G. Manufacture of calcium hypochlorite bleach liquor. Canadian patent 491,374. Filed Aug. 8, 1950. Issued March 17, 1953. 7 claims. Assigned to Paper Patents Company.

A continuous cyclic process for the preparation of a calcium hypochlorite bleaching liquor for papermaking is claimed. Water, lime, and chlorine are continuously maintained at known strengths in a mixing pool and the bleach liquor is continuously withdrawn. This is the same as U. S. patent 2,587,845 (March 4, 1952); *cf.* B.I.P.C. 22: 625. 1 figure. R.C.R.

KRAHLER, STANLEY E. Fluorescent optical bleaching agents. U. S. patent 2,600,004. Filed June 18, 1951. Issued June 10, 1952. 3 claims. Assigned to E. I. du Pont de Nemours and Company. [Cl. 252-301.2]

A fluorescent agent for cellulosic and textile fibers is claimed. 4,4′-bis(3-methoxy-2-naphthoylamino)-stilbene-2,2′-disulfonic acid and its disodium salt, alone or in combination with 4,4′-bis(2,4-dimethoxy-benzoyl-amino)-stilbene-2,2′-di(sodium-sulfonate) impart a pure white color (in daylight) to yellowish bleached cotton and may prove applicable to the bleaching of paper pulps. R.C.R.

BOARD, ASBESTOS

BERNARD, WILLIAM, and BERNARD, JOSEPH. Apparatus for manufacturing cement-asbestos board. Canadian patent 491,650. Filed Feb. 14, 1950. Issued March 31, 1953. 9 claims. Assigned to American Asbestos Industries, Inc.

Conventional machinery has been modified to obviate the use of save-alls and a floor-drainage system. The restyled vat (I) connects with a receptacle (II) containing the cement-asbestos slurry. Conduits feed the slurry from (II) to (I) and when the (I) level reaches a predetermined point, conduct the slurry back to (II) eliminating waste and overflow. 8 figures. R.C.R.

BOARD, BUILDING

BUTTRESS, GEORGE A. Method of making perforated composition plasterboard. U. S. patent 2,633,441. Filed Aug. 7, 1950. Issued March 31, 1953. 3 claims. [Cl. 154-87]

A plasterboard comprising plaster faced on each side with sheets of paper or pulpboard is perforated by pressing the facing sheets together at spaced intervals, so that depressions in the moistened board are formed; while the sheets and plaster are still in moist condition, the board is perforated through these depressions, causing the facing sheets to form a seal around each aperture. 5 figures. R.C.R.

MISCALL, JACK, and RAHR, CHESTER E. Building board. U. S. patent 2,634,207. Filed Dec. 31, 1947. Issued April 7, 1953. 1 claim. Assigned to Great Lakes Carbon Corporation. [Cl. 92-3]

An insulating and building board comprising 25-90% by weight of cellulosic fibers and 10-75% expanded perlite in the form of discrete particles less than 20-mesh size is claimed. Addition of the perlite to the pulp slurry increases drying time, strength, and insulating properties of the board. L.E.W.

MISCALL, JACK, and RAHR, CHESTER E. Building board. U. S. patent 2,634,208. Filed Dec. 31, 1947. Issued April 7, 1953. 1 claim. Assigned to Great Lakes Carbon Corporation. [Cl. 92-3]

This is a slight modification of U. S. patent 2,626,864; *cf.* B.I.P.C. 23:450. L.E.W.

BOARD, FIREPROOF

ECKERT, LEWIS W. Fire-resistant coating composition. U. S. patent 2,632,741. Filed Jan. 19, 1952. Issued March 24, 1953. 8 claims. Assigned to Armstrong Cork Company. [Cl. 260-17.3]

The composition used as a fire-resistant coating for fiberboard and the like consists of monocalcium phosphate, and the reaction product formed by heating a thin-boiling starch, pearl starch or mixtures of these, with a dicyandiamide-aldehyde resin mixture at 180-200°F. for varying time periods. L.E.W.

ECKERT, LEWIS W. Fire-resistant coating composition and method of making the same. U. S. patent 2,632,742. Filed Jan. 19, 1952. Issued March 24, 1953. 16 claims. Assigned to Armstrong Cork Company. [Cl. 260-17.3]

The fire-resistant coating for fiberboard consists of a mixture of the heat-degradation product formed by heating at 170-200°F. a suitable starch with mono- or diammonium phosphates (alone or in admixture), a dicyandiamide-aldehyde resin, and phosphoric acid. Suitable pigments, fillers, and varying amounts of water are added, depending on the method of application of the coating. L.E.W.

ECKERT, LEWIS W. Fire-resistant coating composition for fiberboard and the like. U. S. patent 2,632,743. Filed Jan. 19, 1952. Issued March 24, 1953. 9 claims. Assigned to Armstrong Cork Company. [Cl. 260-17.3]

The fire-resistant coating composition for fiberboard and similar building materials consists of a water dispersion of monocalcium phosphate, a thin-boiling starch, pearl starch (alone or in admixtures), and a dicyandiamide-aldehyde resin. Small amounts of phosphoric acid, and various pigments, fillers, and preservatives may be added as required. L.E.W.

BOARD, LAMINATED

HOWALD, ARTHUR M. Preparation of polymerized polyester resin materials of improved strength and water resistance. U. S. patent 2,632,744. Filed Jan. 31, 1947. Issued March 24, 1953. 10 claims. Assigned to Libbey-Owens-Ford Glass Company. [Cl. 260-17.3]

Cellulosic material (cloth, paper-laminating material, or finely divided cellulose), 1-400 parts, is impregnated with 1/200 to 10 times its weight of a urea- or melamine-formaldehyde resin, heated, and treated with a polymerizable ester of a polyhydric-polycarboxylic acid (I) dissolved in a suitable solvent mixture (e.g., acetone) containing a suitable catalyst (e.g., benzoyl peroxide). A series of tables give data on flexural-, compressive-, and impact strength, and Barcol hardness, both before and after treatment with varying amounts of (I). Improvement was noted both in strength and in water resistance. L.E.W.

BOARD DRYING

GASTON, JACK E. Method of removing water from fibrous masses. U. S. patent 2,633,062. Filed Sept. 30, 1947. Issued March 31, 1953. 6 claims. Assigned to Armstrong Cork Company. [Cl. 92-54]

Formed and compressed insulation blocks made by molding the mats from a slurry of fibers (mineral wool, paper pulp, etc.), asphalt, and water are drained of a substantial amount of water prior to oven drying by tilting the blocks at an angle of 15-90° from the horizontal. Blocks tilted at 57° for 20 hours lost 45% water. 1 figure. R.C.R.

BOARD SPECIALTIES

ADDISON, JOHN S. Shipping package and pallet means. U. S. patent 2,633,982. Filed July 14, 1949. Issued April 7, 1953. 2 claims. Assigned to Addison-Semmes Corporation. [Cl. 206-46]

This corresponds to Canadian patent 487,132 (Nov. 4, 1952); *cf.* B.I.P.C. 23: 289. 4 figures. R.C.R.

ARNESON, EDWIN L. Article carrier. U. S. patent 2,634,043. Filed

Nov. 13, 1951. Issued April 7, 1953. 2 claims. Assigned to Morris Paper Mills. [Cl. 229-28]

A one-piece paperboard bottle carrier has a multiple-ply longitudinal partition and handle panel from which the cross partition panels are cut. The handle is reinforced with additional plies from waste areas of the carton blank. 10 figures. R.C.R.

FINKBONE, BURL E. Basket. U. S. patent 2,632,595. Filed Oct. 22, 1949. Issued March 24, 1953. Assigned to The Fairfield Paper and Container Company. [Cl. 229-52]

A rectangular container and handle made of fiberboard, paperboard, or corrugated board are used as a produce basket (e.g., for tomatoes). The basket can be readily set up from a single cut and scored blank and the vertically movable bail handle inserted through openings in the side wall flaps. 7 figures. R.C.R.

HOLY, MITCHEL E. Collapsible carrier. Canadian patent 491,682. Filed Oct. 11, 1951. Issued March 31, 1953. 2 claims. Assigned to Container Corporation of America.

A paperboard bottle carrier manufactured on high speed equipment is erected manually and held in this position by a partition element. This is the same as U. S. patent 2,576,179 (Nov. 27, 1951); *cf.* B.I.P.C. 22: 369. 6 figures. R.C.R.

JACOBSSON, EDWARD G. Shopping bag and package display carrier. U. S. patent 2,633,287. Filed Sept. 30, 1948. Issued March 31, 1953. 7 claims. [Cl. 229-54]

Multiple-compartment heavy paper bags form a combined shopping-bag (I) and display-carrier assembly (II). (II) extends outwardly from either side of the bottom of (I) and can be in the form of a partitioned cardboard bottle carrier or, when made from the same paper blank as (I), two side pockets. 8 figures. R.C.R.

MARK, JACOB G. Divider for bottle-carrying carton. Canadian patent 491,544. Filed Dec. 19, 1950. Issued March 24, 1953. 5 claims. Assigned to Hinde & Dauch Paper Company of Canada.

A cardboard divider for a bottle-carrying carton is made of a single cut and scored blank hingedly connected in three parts. One part forms a central partition and the other two provide flaps adapted to swing outward, forming other partitions. 7 figures. R.C.R.

RANSEEN, MAURITZ C. Card supporting device. Canadian patent 491,464. Filed June 13, 1952. Issued March 24, 1953. 16 claims.

A display card holder of paperboard, plastic, or light metal rigidly holds one or more cards between front and rear upright members attached to a common base and in part to each other. 31 figures. R.C.R.

RINGLER, WILLIAM A. Knockdown carrier. U. S. patent 2,634,895. Filed Nov. 20, 1947. Issued April 14, 1953. 2 claims. Assigned to The Gardner Board and Carton Co. [Cl. 229-15]

A collapsible paperboard bottle carrier is fully partitioned and has a de-

tachable wire handle whose ends pass through slots in the center wall of the carrier. 14 figures. R.C.R.

TOMARIN, HARRY A. Shirt board. U. S. patent 2,633,275. Filed Oct. 24, 1951. Issued March 31, 1953. 6 claims. Assigned to Loroco Industries Incorporated. [Cl. 223-71]

A one-piece cardboard shirt board with rolled side and bottom edges (to prevent crease lines), has a double locking panel formed in the upper half of the board to secure releasably the sleeves and tail of a shirt. 9 figures. R.C.R.

WALLACE, EARL C. Hassock and method of making same. U. S. patent 2,634,797. Filed Sept. 1, 1950. Issued April 14, 1953. 8 claims. Assigned to The Hettrick Manufacturing Company. [Cl. 155-169]

A chest-type hassock has double walls of corrugated paperboard enclosing wooden braces which reenforce the top and bottom edges. Steel binding tape secures the braces and the hassock may be upholstered with any inexpensive material. 14 figures. R.C.R.

CELLULOSE ETHERS

SAVAGE, ALBERT B., and SWINEHART, RICHARD W. Alkali cellulose compositions. U. S. patent 2,602,083. Filed June 4, 1947. Issued July 1, 1952. 1 claim. Assigned to The Dow Chemical Company. [Cl. 260-233]

A method for the production of uniformly substituted, water-soluble methylcellulose with an improved efficiency in the etherification reaction is claimed. The alkali cellulose (I) (from linters or wood pulp) contains at least 0.9 and not over 1.2 parts of sodium hydroxide and at least 1.6 and not substantially over 2.25 parts of water per part of cellulose. The ratio of alkali to water represents a sodium hydroxide solution of 32-38%. When treated with methyl chloride (or other methylating agents) under the usual conditions of etherification, (I) gives more uniform, more completely soluble, and more viscous methyl ethers than those normally obtained; the properties of such products are given in a series of tables. L.E.W.

COMBINATION PACKAGES

BRANDT, DONALD V., and CHEEK, STERLING R. Container for cigarettes and matches. U. S. patent 2,634,854. Filed Aug. 30, 1951. Issued April 14, 1953. 2 claims. [Cl. 206-48]

A lightweight paperboard container is designed to hold a pack of standard size cigarettes. Safety matches are carried on the front and back of the container and a match-striking pad is mounted on the side. The invention is intended as an advertising medium. 6 figures. R.C.R.

DIGESTERS

NEVIN, LEONARD C. Strainer for digesters. U. S. patent 2,634,209. Filed May 19, 1948. Issued April 7, 1953. 8 claims. Assigned to Chemipulp Process, Inc. [Cl. 92-7]

This is the same as Canadian patent 490,416 (Feb. 10, 1953); *cf.* B.I.P.C. 23: 517. 12 figures. R.C.R.

DISPENSING CONTAINERS

ALDEN, CARROLL R. Dispensing container. Canadian patent 491,330. Filed July 28, 1950. Issued March 17, 1953. 10 claims. Assigned to Ex-Cell-O Corporation.

A tubular paperboard container of square cross section for liquids (e.g., milk) and a top-end closure with an extensible and readily closeable pouring spout formed from the initial opening of the carton are claimed. 13 figures. R.C.R.

BORD, MAX. Pouring spout for cartons. U. S. patent 2,634,897. Filed Oct. 18, 1947. Issued April 14, 1953. 1 claim. [Cl. 229-17]

The spout claimed is an integral part of the paperboard carton and its hinged connection to the carton permits it to be opened 90° without strain. Adjoining, supporting flaps provide a sealed closure on all four sides when the spout is closed. 10 figures. R.C.R.

GRAVENO, JOHN C. Container. U. S. patent 2,634,896. Filed Jan. 14, 1950. Issued April 14, 1953. 2 claims. Assigned one-half to Joseph E. Stern. [Cl. 229-17]

Square milk bottles of foldable, moistureproof material are closed at the top with a staple member and are provided with integrally formed, collapsible, spoutlike closing and discharge portions. 5 figures. R.C.R.

JURZYNIEC, VINCENT V. Tissue container. U. S. patent 2,633,984. Filed Jan. 11, 1951. Issued April 7, 1953. 10 claims. [Cl. 206-57]

A re-usable cardboard tissue container and dispenser is formed from a single blank. The hinged top is held in place by interlocking tongues which also act to retain the bellowslike corner members in position. 10 figures. R.C.R.

MANDEL, JACOB. Tissue dispensing device. U. S. patent 2,634,855. Filed Sept. 4, 1951. Issued April 14, 1953. 3 claims. [Cl. 206-57]

A transversely hinged flat piece of cardboard under the stack of tissues in a dispenser is kept under tension, forcing the tissues upward by means of a rubber band secured in the notched sides of the cardboard as the upper layers are removed. 5 figures. R.C.R.

MEYER, EDWIN A. Cutter box roll carton. U. S. patent 2,633,985. Filed July 29, 1949. Issued April 7, 1953. 1 claim. [Cl. 206-58]

A rectangular cardboard dispensing carton for wax paper comprises an upwardly opening box with a hinged cover infolded at its lower edge and coated with a metallic paint along this fold to form a cutting edge. The front panel of the box presses outward against the inwardly pressing cover and secures the paper against slipping. 4 figures. R.C.R.

FILTERING SPECIALTIES

TAYLOR, WILLIAM I., and GREBBY, JOHN W. Process for the production of fibrous filter media. U. S. patent 2,620,283. Filed

Sept. 4, 1948. Issued Dec. 2, 1952. 5 claims. Assigned to Celanese Corporation of America. [Cl. 117-65]

Felted sheets of cellulose fibers (cotton linters, etc.) are impregnated with 1-5% aqueous solutions of water-soluble cellulose ethers (methylcellulose); the sheets are compressed and water is removed from the compressed sheets to produce filters for spinning solutions of cellulose acetate in acetone. R.C.R.

FOLDING BOXES

CRINKLEY, MATTHEW A., and SWANSON, EMERY C. Box. U. S. patent 2,634,045. Filed Sept. 27, 1947. Issued April 7, 1953. 4 claims. [Cl. 229-31]

A hinged-top cardboard cake or pastry box designed to be set up by the consumer just prior to use, eliminates the usual tabs and slots and substitutes infolds (inwardly folded portions) and flaps which fold into place supporting the side walls. 9 figures. R.C.R.

INMAN, WILLIAM H. Collapsible cellular carton. U. S. patent 2,634,898. Filed Aug. 2, 1946. Issued April 14, 1953. 3 claims. Assigned to Bloomer Bros. Company. [Cl. 229-28]

Cellular egg cartons are made from one-piece cardboard blanks, cut, scored, and glued for folding. A hinged top is attached to the rear side and inner triangular trusslike supports cushion the bottom section; there are no projections on the outside of the carton. 9 figures. R.C.R.

KAUFMAN, ELMER A. Foldable carton. U. S. patent 2,634,040. Filed Dec. 7, 1949. Issued April 7, 1953. 1 claim. Assigned to Burroughs Adding Machine Company. [Cl. 229-16]

A carton for transporting or storing rolls of photographic film has a bottom and four connected side wall portions, two of which connect with two top portions adapted to overlap each other, permitting two different cover designs or labels. 3 figures. R.C.R.

LEVKOFF, DAVID. Folding box or carton. U. S. patent 2,634,900. Filed Nov. 1, 1949. Issued April 14, 1953. 6 claims. [Cl. 229-41]

Two different forms of folding traylike cartons from single scored and cut cardboard blanks are claimed. The glued set-up boxes collapse for storing and shipping by folding along the bottom and end portions. The two forms differ only in the construction of the end portion; one has a hinged tab assembly. 10 figures. R.C.R.

MELLER, REGINALD R. Glueless interlock for folding box panels. U. S. patent 2,634,899. Filed April 17, 1948. Issued April 14, 1953. 4 claims. Assigned to Bemiss-Jason Company. [Cl. 229-35]

Glueless paperboard cartons are maintained in position by the interengagement of the panels or flaps constituting the box blank. An edge-to-edge interlock between the flaps is supplemented by corner-lock tabs. 4 figures. R.C.R.

SNYDER, JAMES E. Container for fruits and vegetables. U. S. patent 2,633,238. Filed Dec. 31, 1949. Issued March 31, 1953. 1 claim. Assigned to Wingfoot Corporation. [Cl. 206-45.33]

A rectangular container with a bottom and two or three sides of boxboard and the top and remaining sides of a transparent film (e.g., cellophane, etc.), is used for the packaging of fruits, vegetables, and meats. The sides are held erect by a wire frame. 6 figures. R.C.R.

TYRSECK, WALTER J. Cartons. Canadian patent 491,392. Filed Sept. 11, 1950. Issued March 17, 1953. 12 claims. Assigned to Robertson Paper Box Company Incorporated.

A shockproof or cushioned pasteboard carton is adapted for the packaging of bottles or similar articles. This is the same as U. S. patent 2,533,070 (Dec. 5, 1950); *cf.* B.I.P.C. 21:363. 5 figures. R.C.R.

GASTIGHT PACKAGING

BERGSTEIN, SAMUEL. Method and means for the end coating of packages. U. S. patent 2,632,918. Filed June 8, 1949. Issued March 31, 1953. 23 claims. [Cl. 18-1]

Improvements to U. S. patent 2,548,251 (April 10, 1951; *cf.* B.I.P.C. 21:668) comprise the method and means of applying a thermoplastic, gastight coating substance (I) to paperboard container ends. Molten or heat-softened (I) is applied first by flanged wheels or rolls and is then pressed by a molding device to the desired configuration. A cover member fitting over (I) and molded around the ends of the container is not needed, if the molding device is sprayed with a liquid to prevent (I) from adhering to it. 47 figures. R.C.R.

INSULATION AND INSULATING MATERIALS

HOLLENBERG, FREDERICK H., JR. Insulating material. U. S. patent 2,633,433. Filed May 2, 1946. Issued March 31, 1953. 11 claims. Assigned to Baldwin-Hill Company. [Cl. 117-126]

The material consists of an interfelted web made from inorganic fibers (e.g., glass wool, or asbestos), 2-18% bentonite and 1-10% of a synthetic thermosetting condensation product, is fire- and waterproof and has a high flexural strength, as well as heat- and electrical-insulating properties. L.E.W.

MACHINERY—BREAST ROLL

FASOLI, PAUL A. Apparatus for manipulating breast rolls. U. S. patent 2,634,658. Filed April 13, 1949. Issued April 14, 1953. 5 claims. Assigned to The Sandy Hill Iron & Brass Works. [Cl. 92-44]

The apparatus is constructed to support the breast roll rotatably and move it from operating position for removal of the Fourdrinier wire. 7 figures. R.C.R.

MACHINERY—CALENDERS

COWIE, IRA C., and PURCELL, JASPER H. Method of processing paper. U. S. patent 2,635,509. Filed Oct. 26, 1946. Issued April 21, 1953. 9 claims. Assigned to Glassine Paper Company. [Cl. 92-68]

Glassine and greaseproof papers can be made with dissimilar surface characteristics by running two or more sheets through a modified supercalender (I). The sheets must be separated and pass over a series of spreader

boards before they enter (I) and must not come together until the moment they reach each nip of the stack, separating again as they emerge. The paper produced by this method is less expensive, the unpolished inner surfaces of the sheets are better suited for certain purposes (laminating), and wear and tear on (I) is reduced. 3 figures. R.C.R.

MACHINERY—CHIPPERS

FORMAN, WILLIAM O. Wood and brush chipping machine. U. S. patent 2,634,062. Filed Sept. 21, 1948. Issued April 7, 1953. 9 claims. Assigned to Fitchburg Engineering Corporation. [Cl. 241-239]

A portable self-feeding chipping machine for use in logged areas comminutes brush, branches, and small trees (5-inch diameter) into easily transportable 4-5 inch chips. A spring loaded work supporting platform constantly forces the brush into a high-speed cylindrical cutting tool. 5 figures. R.C.R.

MACHINERY—CONVERTING MACHINERY

MAGNANI, ALESSANDRO. Apparatus for forming cement sheets. U. S. patent 2,635,508. Filed Feb. 27, 1948. Issued April 21, 1953. 6 claims. [Cl. 92-44].

This is a continuation-in-part of U. S. patent 2,592,518; *cf.* B.I.P.C. 22: 710. An improvement in the previous patent comprises the provision of better sealing means between adjacent suction boxes, means tending to prevent the spreading of the deposited fibrous cement material on the traveling pervious belt, and means for insuring a smoother travel of the belt. 7 figures. R.C.R.

WATSON, WILLIAM R. Boxmaking machine. U. S. patent 2,633,780. Filed March 22, 1951. Issued April 7, 1953. 9 claims. Assigned to Bird & Son, Inc. [Cl. 93-49]

A machine is provided in which the setup box end is glued with the box in a horizontal position and the pressing operation is performed with the box at an angle of 30° to the horizontal; this enables the operator to grasp the boxes in the most effective way for handling. 3 figures. R.C.R.

WELSTEIN, MICHEL. Container making machine. U. S. patent 2,633,064. Filed Dec. 8, 1949. Issued March 31, 1953. 21 claims. [Cl. 93-44]

Closely guided, unattached mandrels move in a vertical cyclic path to form rectangular five-sided or tray-shaped boxes or box lids from cardboard sheet stock. 5 figures. R.C.R.

MACHINERY—CUTTERS

NEWBOLD, PARK L. Carton cutter. U. S. patent 2,632,945. Filed June 1, 1948. Issued March 31, 1953. 3 claims. [Cl. 30-2]

A carton cutter is designed specifically to open cigarette cartons for the purpose of stamping the individual packages. 7 figures. R.C.R.

RUPP, WILLIAM C. Brake mechanism for paper-cutting machines and the like. U. S. patent 2,633,219. Filed Aug. 27, 1949. Issued

March 31, 1953. 17 claims. Assigned to The Chandler & Price Company. [Cl. 192-144]

A disk-type brake for securing and locking the knife of a power-driven paper cutter after each cut requires two separate movements by the operator to release it for its next downward swing. 6 figures. R.C.R.

RUPP, WILLIAM C. Clamp for paper-cutting machines. U. S. patent 2,633,195. Filed Nov. 16, 1948. Issued March 31, 1953. 7 claims. Assigned to The Chandler & Price Company. [Cl. 164-51]

An automatic, vertically reciprocable clamp for holding a stack of papers in place on a power-driven paper cutter is actuated in timed relationship to the knife; if desired, power operation of either clamp or knife individually is possible. 4 figures. R.C.R.

TARAN, HARRY. Straightedge and paper cutter. U. S. patent 2,633,196. Filed May 9, 1950. Issued March 31, 1953. 4 claims. [Cl. 164-73]

A wallpaper cutter slidably mounted on a straight edge comprises a removable razor blade secured in a pivotally mounted support member so that either end of the cutting edge can be used. 4 figures. R.C.R.

MACHINERY—DANDY ROLLS

SOUTHWORTH, MELVIN D. Cleaning device for dandy rolls. U. S. patent 2,633,779. Filed April 7, 1950. Issued April 7, 1953. 1 claim. Assigned to Southworth Company. [Cl. 92-48]

A brush structure with bristles movable downward to clean the surface of a rotating dandy roll or upward out of engagement with it is mounted on a bracket on the paper machine. 3 figures. R.C.R.

MACHINERY—GUIDE ROLLS

COOPER, LYNN F. Guide for moving webs or sheets. U. S. patent 2,632,642. Filed April 6, 1949. Issued March 24, 1953. 12 claims. Assigned to Gilbert & Nash Company. [Cl. 271-2.6]

A sensitive wire guide for laterally moving webs of paper, regenerated cellulose, felt, etc. includes a palm, linkably connected to a valve mechanism (1) controlling a source of high-pressure fluid. (1), maintained under a balanced pressure, directs the fluid to either side of a double-acting piston which effects shifting of the guide and the guide roll, journaled at one end in the guide. The fluid is supplied by a rotary hydraulic pump driven by the guide roll and the faster the web travels, the faster is the corrective response of the guide. 10 figures. R.C.R.

MACHINERY—JORDANS

STUCK, HAROLD D. Removable grinding lining for jordan engines. U. S. patent 2,633,778. Filed Nov. 27, 1948. Issued April 7, 1953. 8 claims. Assigned to John W. Bolton & Sons, Inc. [Cl. 92-27]

Removable abrasive members for a jordan plug and shell are slipped end to end into pockets along the inner surface of the shell or on the conical surface of the plug and are held in place by a low melting-point alloy. This

is the same as Canadian patent 478,113 (Oct. 30, 1951); *cf.* B.I.P.C. *22*: 297. 12 figures. R.C.R.

MACHINERY—PACKAGING MACHINERY

CURRIVAN, JOHN F. Carton closing and printing device for cartoning machines. U. S. patent 2,634,565. Filed Jan. 12, 1949. Issued April 14, 1953. 21 claims. Assigned to Emhart Manufacturing Company. [Cl. 53-60]

Means for printing information upon the ends of lightweight cardboard cartons are combined with a power-driven closing device comprising rapidly moving chains or rollers; closure results from a wiping engagement of the rollers with the flaps. 13 figures. R.C.R.

DAVIES, H. FRANK. Bag packaging method and machine. U. S. patent 2,633,280. Filed Dec. 17, 1945. Issued March 31, 1953. 25 claims. Assigned to The Great Western Sugar Company. [Cl. 226-14]

The machine claimed automatically fills paper bags with a loose material (sugar), squares each bag, and places it in a bale with a minimum of wear to the individual bags. 11 figures. R.C.R.

OHRN, RUDOLPH E. Apparatus for bottom closing paperboard containers. U. S. patent 2,634,566. Filed Nov. 15, 1950. Issued April 14, 1953. 10 claims. Assigned to Container Corporation of America. [Cl. 53-145]

The apparatus comprises a roller conveyor of four sections with longitudinally spaced gaps, constructed to fold (or permit the folding of) both the inner and outer bottom closure flaps of a paperboard container beneath the article it encloses without lifting, tilting, or moving the article. 8 figures. R.C.R.

STROOP, JOHN H. Packaging machines. Canadian patent 491,372. Filed April 26, 1950. Issued March 17, 1953. 29 claims. Assigned to The Pad-Y-Wax Company, Inc.

A packaging machine forms pockets or envelopes from webs of flexible heat-sealable material (cellophane) and co-operates with a device which feeds articles (e.g., pills) into the pockets which are then immediately sealed. 11 figures. R.C.R.

MACHINERY—PASTING MACHINE

BERGSTEIN, SAMUEL. Machine for sealing the ends of wrapped articles. U. S. patent 2,634,564. Filed Jan. 15, 1948. Issued April 14, 1953. 4 claims. [Cl. 53-60]

A machine is claimed for sealing an erected and closed paperboard carton, wrapped in sheet material (paper, glassine, metal foil, etc.) and precoated with a thermoplastic adhesive. With the ends of the wrapper still open, heat softened, thermoplasitc material is deposited directly on the carton ends and the wrapper folded down on it insuring a moistureproof and gastight seal. 29 figures. R.C.R.

FLANAGAN, JAMES R. Package sealing machine. U. S. patent 2,634,876. Filed Jan. 12, 1951. Issued April 14, 1953. 11 claims. Assigned to Stephen F. Whitman & Son, Inc. [Cl. 216-21]

Paperboard cartons move from the packing belt, between guide rails, along a table and are automatically sealed with adhesive or gummed paper by positioned applicators. 6 figures. R.C.R.

OHRN, RUDOLPH E. Gluing machine. U. S. patent 2,633,063. Filed March 19, 1951. Issued March 31, 1953. 9 claims. Assigned to Container Corporation of America. [Cl. 93-36.4]

An open-head gluing machine of compact, space-saving construction and a method for gluing the manufacturer's joint of collapsed paperboard containers prefolded into tubular form are claimed. The blank is partially unfolded with the edges still in overlapping position, and glue is applied to the edge portions which are then brought into contact and held together to cause their adherence. 19 figures. R.C.R.

MACHINERY—SLITTERS AND WINDERS

HEYGEL, PAUL R. Winding machine. U. S. patent 2,632,607. Filed Sept. 9, 1947. Issued March 24, 1953. 5 claims. Assigned to Ecusta Paper Corporation. [Cl. 242-65]

Fast and safe rewinding of narrow-width bobbins of cigarette paper can be accomplished on the machine claimed which incorporates an arrangement for mounting and counterbalancing the rewinding spindle to avoid vibration at high operating speeds. 6 figures. R.C.R.

MOLDED PULP ARTICLES

SCHWERTFEGER, WALTER J. Molded pulp article. U. S. patent 2,634,039. Filed June 10, 1947. Issued April 7, 1953. 6 claims. Assigned to Keyes Fibre Company. [Cl. 229-15]

Molded-pulp egg cartons are adapted for use in egg crates holding 30 dozen eggs. The cartons comprise individual egg cups, a two sectioned cover (closing at the center of the top) and side rims, one of which is lower than the other and provides a ledge for the higher rim of an adjoining carton. 6 figures. R.C.R.

PACKAGING

BLOOM, SAMUEL M. Shirt package and method of packaging. U. S. patent 2,632,564. Filed May 7, 1951. Issued March 24, 1953. 9 claims. [Cl. 206-46]

A method for packaging shirts utilizes a folded thin sheet of cardboard on which the shirt is folded and an opaque bag with a window through which identification marks may be read. 8 figures. R.C.R.

MAGILL, DONALD G., and BIGGER, RICHARD P. Method of producing bulged containers. U. S. patent 2,634,563. Filed Dec. 13, 1950. Issued April 14, 1953. 3 claims. Assigned to American Can Company. [Cl. 53-11]

Single-ply, liquidproof, paperboard sidewalls for frozen-food containers are made to bulge by forcing them into metal-end units slightly smaller than the end dimensions of the sidewalls. A single flexible wall permits more rapid freezing and subsequent thawing. 7 figures. R.C.R.

MACINTYRE, WILLARD C. Container. U. S. patent 2,632,563.

Filed June 16, 1950. Issued March 24, 1953. 10 claims. [Cl. 206-45.32]

A circular heavy paper band with interlocking notched ends and two or more circumferentially extending slots for securing the rim of a pie plate is combined with a cellophane top cover and the plate to form a cylindrical container for pies. 7 figures. R.C.R.

MIRES, JOSEPH E. Light bulb cartons. Canadian patent 491,587. Filed May 15, 1948. Issued March 24, 1953. 10 claims. Assigned to Somerville Limited.

V-shaped corrugated supports for light bulbs contain spaced orifices in both walls for holding light bulbs in alternate arrangement (the bulb part of one lies next to the base of the next one). The support fits into a rectangular sleeve. 13 figures. R.C.R.

SULLIVAN, FRANK N. Packaging. Canadian patent 491,361. Filed Aug. 11, 1950. Issued March 17, 1953. 7 claims. Assigned to Kraft Foods Company.

An inexpensive strong paperboard package for process cheese comprises two sections. An open-topped box with a grease-resistant liner contains the cheese and fits into a jacket (easily opened and closed) carrying printed material. 12 figures. R.C.R.

VOGT, CLARENCE W. Package of triangular objects. U. S. patent 2,633,986. Filed Jan. 28, 1950. Issued April 7, 1953. 1 claim. [Cl. 206-65]

Prismatic objects with triangular cross sections are packaged by placing their hypotenuses face to face with a liner interposed and extending beyond the ends of the block so formed. The liner ends are enclosed by the transparent or opaque sheet material used as a wrapper. 7 figures. R.C.R.

WATSON, NATHAN J., and ROCHE, JOHN C. Packaging tray. Canadian patent 491,675. Filed June 12, 1950. Issued March 31, 1953. 9 claims. Assigned to Chicago Carton Company.

A traylike paperboard separator which is designed for use in the packaging of bakery products (e.g., cookies) is enclosed in a transparent wrapper. This is the same as U. S. patent 2,584,967 (Feb. 5, 1952); *cf.* B.I.P.C. *22*: 547. 5 figures. R.C.R.

PAPER—COATED

LOOMER, JOSEPH T. Process for coating paper web. U. S. patent 2,632,714. Filed April 4, 1950. Issued March 24, 1953. 6 claims. Assigned to Robert Gair Company, Inc. [Cl. 117-60]

The web is coated with an aqueous solution of an aldehyde (glyoxal), wet calendered, and a second coating of a mineral pigment with a protein adhesive or a protein solution alone is superimposed. Exposure to radiant heat enables the outer portions of the coated web to harden as fast as the inner part which absorbs the highest concentration of glyoxal; when the sheet reaches the finishing calender stacks the coating has been insolubilized throughout without case hardening. R.C.R.

MONTGOMERY, WILLIAM J. Method of coating paper. U. S. re-

issue patent 23,637. Filed April 9, 1952. Issued March 24, 1953. 32 claims. Assigned to The Champion Paper and Fibre Company. [Cl. 117-64]

The method provides for the continuous production of a uniformly high-quality, cast-surfaced, coated paper. In the original U. S. patent 2,568,288 (*cf.* B.I.P.C. 22: 153), tributyl phosphate (excluded in this reissue) was one of the oleaginous film-forming materials used in the coating composition. The reissue is concerned mainly with the establishment and maintenance of the coating composition on the casting surface; oleaginous materials from the group consisting of fatty acids, saponified fats, saponified fatty acids, and sulfonated oils, having from 8 to 22 carbon atoms in the chain and tending to form oriented layers, are continuously applied to the casting surface to maintain the film. R.C.R.

ORIEL, BENJAMIN J. Coated paper. U. S. patent 2,634,220. Filed Dec. 29, 1949. Issued April 7, 1953. 1 claim. [Cl. 117-154]

Sheets of white paper for use with toy typewriters and erasable with water are claimed. The paper is coated with a layer of a hydrous poly-alco-gel base comprising 3.5-7.5% by weight of triacetyl-arabino-galacto-dimethoxy-tetragalacturonic acid (pectic material), 7.5-18% glycerin, 0.02% benzoic acid, and 75-89% isotonic solution of three chlorides (sodium, potassium, and calcium chlorides). R.C.R.

PAPER SPECIALTIES

BENNETT, CLARENCE G. Wrapper for hams. U. S. patent 2,632,723. Filed May 15 1950. Issued March 24, 1953. 2 claims. Assigned to Paterson Pacific Parchment Company. [Cl. 154-50]

A triple layered wrapping paper for hams, bacon, etc. comprises an inner greaseproof sheet, an intermediate absorbent sheet (groundwood, sulfate, or sulfite stock) and an outer wrapper sheet suitable for printing. The three sheets are secured at one edge. 2 figures. R.C.R.

BIXLER, ANDREW L. M., and FISHER, JACOB I. Making elastomer containing paper. U. S. patent 2,635,045. Filed April 21, 1948. Issued April 14, 1953. 15 claims. Assigned to Riegel Paper Corporation. [Cl. 92-21]

A tough, pliable sheet of paper with high initial tear strength and 20-50% elastomeric materials incorporated in it can be made from bleached or unbleached kraft, sulfite, soda, semichemical, groundwood, rag, rope, or jute pulps. The beaten fiber solids (3-5% consistency) are diluted to about 1% consistency before the addition of the elastomer-containing emulsion (I). The protective colloid chemicals (oxalic acid, sodium hydroxide, sodium silicate sirup, etc.) can be added before or after dilution of the stock, prior to the addition of (I); alum is used as the precipitant, and time is allowed for solution and mixing after the addition of each chemical. The fiber slurry has a pH of 5.0 to 6.5 before (I) is added. When the precipitating consistency was 1%, the tensile strength of the paper sample amounted to 2155 p.s.i. and the initial tear factor, to 33,000; at 4%, the same figures were 1474 p.s.i. and 8850, respectively. R.C.R.

CLARIDGE, ROBERT A., and THOMAS, LEONARD C. Cover and its manufacture. U. S. patent 2,633,286. Filed March 7, 1950. Issued

March 31, 1953. 7 claims. Assigned to Bemis Bro. Bag Company. [Cl. 229-53]

Kraft-paper gusseted covers for furniture and similar large articles comprise four superposed strips of paper; the gusset strips are narrow and lie between the two larger outer sheets, connecting them along one side margin. 6 figures. R.C.R.

DE SYLVA, OSCAR J. Magnetic recording tape and method of making same. U. S. patent 2,633,431. Filed Dec. 20, 1947. Issued March 31, 1953. 5 claims. Assigned to Shellmar Products Corporation. [Cl. 117-64]

Nonmetallic (supercalendered paper stock, cellophane, etc.) webs coated to a final thickness of 0.0004-0.0006 inch with a viscous material containing a dispersion of magnetic sensitive particles (essentially a metallic oxide pigment, a synthetic resin, a plasticizer, and a solvent) are cut for use as recording tapes or record disks. The webs, coated with at least three layers of similar or dissimilar material are given a prime coat with a wet thickness of 0.0015-0.002 inch, followed by rolling, leveling, and heat drying processes. Use of dissimilar coating layers prevents any layer from becoming fluid upon application of the next layer. 4 figures. R.C.R.

DE WET, CHARL L. R. Sanitary napkin. U. S. patent 2,634,229. Filed July 20, 1949. Issued April 7, 1953. 9 claims. Assigned to International Cellucotton Products Company. [Cl. 167-84]

Quaternary ammonium salts characterized by the presence of a molecular group which is bonded to the nitrogen atom and which contains from 8 to 18 carbon atoms, and by the presence of an aryl group which is associated with the nitrogen atom, said aryl group being selected from the group consisting of a benzyl radical and a pyridinium radical, are claimed as deodorizing materials for cellulosic-fiber catamenial bandages. R.C.R.

DIEFFENDERFER, DANIEL S., and BIXLER, ANDREW L. M. Method of producing porous paper. U. S. patent 2,635,958. Filed April 14, 1949. Issued April 21, 1953. Assigned to Riegel Paper Corporation. [Cl. 92-21]

A high-porosity and wet-strength paper consists of a mixture of leather fibers (I) (20-70%) and long cellulose fibers (II), e.g., unbleached kraft pulp. The wet sheet, formed on a papermachine, is first passed over a drying cylinder with a surface temperature of at least 250°F., which heats the sheet to about 160°. This temperature does not char the wet (I) but causes them to adhere to (II) and shrink, gelatinize, and partially decompose, binding (II) and also holding the fibers spaced apart to give a characteristic, irregular porosity to the sheet. A furnish of 50% (I) and (II) forms a filter paper suitable for use as vacuum-cleaner bags. R.C.R.

FLEISCHMANN, LESTER K. Carbon pack for continuous-form stationery. U. S. patent 2,634,139. Filed May 29, 1951. Issued April 7, 1953. 2 claims. [Cl. 282-1]

An improved carbon pack has the rear ends of the carbon sheets stitched to the underside of the leader sheet in a typewriter providing a stronger connection than when the fold line and stitching line coincide. 4 figures. R.C.R.

KELLGREN, WALDO, and MARSCHALL, JOHN W. Method of making stretchable unified paper. U. S. patent 2,633,430. Filed April 26, 1950. Issued March 31, 1953. 4 claims. Assigned to Minnesota Mining & Manufacturing Company. [Cl. 117-60]

The method claimed comprises severely dry calendering a flat porous stretchable creped paper so as to roll down the creping wrinkles, decrease the caliper by at least one fifth, and increase the body-structure density. Without allowing reversion to the precalendered creped state, the paper is unified by impregnating it with a water-insoluble, flexible, and stretchable fiber-bonding organic polymer (rubber-base unifying composition containing a resin adapted to increase the cementing action upon the fibers of the paper), deposited from solution in an organic solvent. The unified paper for use in making adhesive-masking tapes and pressure-sensitive tapes has a stretch value of at least 10%. R.C.R.

KENNEWAY, HAROLD J., JR. Heat-sealable label stock. U. S. patent 2,633,432. Filed Sept. 29, 1949. Issued March 31, 1953. 5 claims. Assigned to McLaurin-Jones Co. [Cl. 117-76]

A heat-sealable label stock comprises a backing sheet with a dry solid coating adhering to one side. The coating consists of two layers—a resinous adhesive layer and a plasticizer which do not merge until heated, and which will then remain tacky for 15 seconds-48 hours depending on the type of coating used. This permits indefinite storing of the stock and eliminates the use of a heating element at the time of application of the stock. One formula combines 13.5 parts (by weight) of Staybellite Ester no. 10, 54 parts of Piccolastic A-75, 47 parts of toluene, 0.75 part of Triton N.E., and 18 parts of Dow Latex 512K in the base coat, and 3 parts of Triton N.E., 36 parts of Dow Latex 512K, 9 parts of Acrysol G.S. (5% solution), 60 parts of diphenyl phthalate, and 40 parts of water in the top coat. R.C.R.

PARMENTIER, ROBERT R. Transparentizing compositions and process. U. S. patent 2,616,815. Filed April 12, 1950. Issued Nov. 4, 1952. 9 claims. [Cl. 106-285]

Solutions are described that lend transparency to paper used in various reproduction processes. These consist of 10-35% of mineral oil, 55-80% of carbon tetrachloride, and 4-10% of benzene, toluene, or xylene. Preferentially the application of such a solution is followed by sealing with a paraffin wax in gasoline and carbon tetrachloride. L.E.W.

PERKINS, JOHN J. Sterile pack for individual disassembled syringes. U. S. patent 2,634,856. Filed March 14, 1952. Issued April 14, 1953. 1 claim. Assigned to American Sterilizer Company. [Cl. 206-63.2]

The disassembled syringe (with the needle in a gauze scrub) is placed in a steam-pervious paper bag for sterilization; upon removal from the autoclave, the contents of the pack remain sterile until the bag is opened for use. 4 figures. R.C.R.

SLIFKIN, SAM C. Light sensitive diazotype materials containing tetrazo diphenyl compounds. U. S. patent 2,632,703. Filed Dec. 30, 1948. Issued March 24, 1953. 7 claims. Assigned to General Aniline & Film Corporation. [Cl. 95-7]

A light-sensitive material for coating diazotype paper stock contains a tetrazo derivative made from an appropriate diamine of the general type $p\text{-}H_2N(X)C_6H_3N\cdot\underset{\llcorner\,(CH_2)_n\,\lrcorner}{(CH_2)_n}\cdot NC_6H_3(X)NH_2\text{-}p$ in which X may be a hydrogen atom, alkyl, or alkoxy group and n is not greater than three. The tetrazo derivatives may be present as double salts (e.g., zinc chloride) and the coupler (e.g., 2,3-dihydroxynaphthalene-6-sulfonic acid) may be incorporated into the coating composition or may be used in the developing solution.
L.E.W.

SMITH, ARCHIE E. Screen supported paper bag for tank cleaner. Canadian patent 491,337. Filed March 28, 1951. Issued March 17, 1953. 6 claims. Assigned to General Electric Company.

A disposable paper dust bag for vacuum cleaners is designed for use either as the liner for a cloth bag or in place of the cloth bag. This is the same as U. S. patent 2,591,382 (April 1, 1952); *cf.* B.I.P.C. 22: 716. 7 figures.
R.C.R.

RAMIE

CHAPMAN, ROBERT S., and SEIBENHAAR, BYRON B. Fiber liberation by steam expansion. U. S. patent 2,633,421. Filed Oct. 23, 1947. Issued March 31, 1953. 3 claims. Chapman's interest assigned to Elmer R. Perkins and Harry Miner. [Cl. 92-1]

Fibers for weaving, carding, etc. are extracted from plants (e.g., ramie stalks) by charging into an expansion gun and admitting steam at temperatures and pressures below the charring point of the nonfibrous material (I) for 10-15 seconds. The charge is then expanded into a closed chamber, washed to remove disintegrated (I), semidried, and recharged into the expansion gun; dry steam is admitted to a pressure of 600 p.s.i. for 5-6 seconds, and the charge expanded. Complete disintegration of all pulpy material and complete separation of the long fibers from the pulpy material are claimed.
R.C.R.

SETUP BOXES

WEBER, MORRIS M. Cardboard box structure. U. S. patent 2,634,046. Filed Aug. 10, 1950. Issued April 7, 1953. 2 claims. [Cl. 229-34]

Inexpensive shallow handkerchief boxes constructed of bending chipboard with patent coating on the outside have a special reinforced side-wall construction to provide the necessary strength and stiffness. 11 figures. R.C.R.

SHIPPING CONTAINERS

BLATT, DAVID H., and MANN, FREDRIC R. Cellular container for article shipping and storage. U. S. patent 2,634,042. Filed April 12, 1949. Issued April 7, 1953. 7 claims. [Cl. 229-28]

A single, cut and scored, corrugated paperboard blank is expanded into a cellular container with interlocking dividing partitions for yarn cones. 7 figures.
R.C.R.

BURNETT, EDWARD N. Container construction. U. S. patent 2,634,041. Filed Feb. 20, 1951. Issued April 7, 1953. 7 claims. Assigned to Gerber Products Company. [Cl. 229-23]

Individual corrugated box units mutually interlock in groups of three or more to provide a unitary box construction with separable cells for storing and/or transporting jars of baby food. Each box has one or two protruding tongues (depending on its position in the assembly) which fit into recesses of the adjoining boxes. 4 figures. R.C.R.

FRANKENSTEIN, WILLIAM P. Carton. U. S. patent 2,634,044. Filed Oct. 18, 1946. Issued April 7, 1953. 17 claims. [Cl. 229-31]

A foldable cardboard box is set up from two blanks, one forming a complete outer box and the other, a partial inner liner. Used for shipping and displaying toys, the box can be reassembled when empty to form a toy building. Supplemental pieces necessary for the building are included inside the carton. 31 figures. R.C.R.

FRENCH, JOHN H., and BAXTER, JAMES C. Sheet metal stoppers for shipping tubes. Canadian patent 491,440. Filed Feb. 3, 1951. Issued March 24, 1953. 7 claims.

A cup-shaped, sheet-metal stopper for the ends of paperboard shipping tubes has a pilot flange with a resilient anchoring rim allowing for easy insertion and removal of the stopper with a minimum of distortion to the tube. 6 figures. R.C.R.

GEORGE, WALTER C., and BOUSQUET, JOHN A. Container. U. S. patent 2,634,038. Filed March 25, 1952. Issued April 7, 1953. 5 claims. Assigned to Gaylord Container Corporation. [Cl. 229-14]

Tall, heavy-duty, rigid, corrugated paperboard containers for shipping and/or storing synthetic rubber blocks comprise a shallow traylike bottom, the sides of which align with a series of telescoping open-ended sleeves of different lengths, whose bottom portions rest on the tray providing maximum support at the base of the container. 11 figures. R.C.R.

KELLS, BENJAMIN F. Partitioned container with closure. U. S. patent 2,633,285. Filed Nov. 12, 1949. Issued March 31, 1953. 3 claims. Assigned to Container Corporation of America. [Cl. 229-15]

A rectangular corrugated paperboard container for shipping baby chicks has partition elements secured therein that extend upward through slots in the cover. At least two of the slots carry tabs which serve as releasable locking means for securing the cover. 3 figures. R.C.R.

KLASING, ARTHUR P., and WILLIAMS, BENJAMIN M. Container. Canadian patent 491,702. Filed Oct. 18, 1951. Issued March 31, 1953. 7 claims. Assigned to Gaylord Container Corporation.

This corresponds to U. S. patent 2,612,305 (Sept. 30, 1952); *cf.* B.I.P.C. 23: 222. 19 figures. R.C.R.

MINSTER, ERNEST J., JR., and SCHOTT, WILLIAM S. Multiple carton structure. U. S. patent 2,632,593. Filed March 31, 1950. Issued March 24, 1953. 1 claim. Assigned to Fort Pitt Brewing Company. [Cl. 229-15]

A double fiberboard carton for beverage cans or bottles comprises a pair of shipping cartons interlocked by the insertion of notched boards common to

both cartons; the adjoining corner edges of the cartons are also notched to receive the insert. The unit can be separated into two cartons by severing a plurality of wall members. 7 figures. R.C.R.

NELSON, HENRY M. Egg case. U. S. patent 2,632,594. Filed May 25, 1951. Issued March 24, 1953. 11 claims. [Cl. 229-27]

A corrugated or fiberboard double-compartment egg case for shipping can be readily knocked down for storage. It is made from a single blank and the compartments are formed by multifolded extension panels. 6 figures. R.C.R.

WARNICK, SAM. Container for garments. U. S. patent 2,633,979. Filed Dec. 16, 1948. Issued April 7, 1953. 3 claims. [Cl. 206-7]

In a corrugated or cardboard shipping and storage container for garments (coats, dresses, etc.), vertical wooden posts stapled to the carton sides support a metal hanger rack extending across the top of the box. The bottom is also reinforced by wooden straps which are secured to the posts. 10 figures. R.C.R.

SHIPPING CONTAINERS—MULTIWALL BAGS

BERGLUND, REUBEN E. Cement sack or the like. U. S. patent 2,634,901. Filed Aug. 23, 1947. Issued April 14, 1953. 5 claims. [Cl. 229-53]

A multilayer paper bag for cement, sand, etc. has a weight-carrying side wall comprising a loop of cord, disposed between layers of the wall, with its end portions exposed to provide handles. 5 figures. R.C.R.

SULFITE PROCESS

LEVON, BENGT. Method of sulfite pulp manufacture with gaseous pretreatment of chips. Canadian patent 491,627. Filed Oct. 25, 1950. Issued March 31, 1953. 8 claims.

At the end of or just prior to the completion of a sulfite cook, about one third of the hot fluid (I) in the digester is bled off, stored under pressure, and utilized in the pretreatment and activation of the wood chips of the next cook, by passing the gaseous components of (I) (i.e., sulfur dioxide and entrained vapors) through these chips. When (I) is bled off, it is replaced with cooler sulfite liquor, under pressure. The liquid component of (I) may be used to furnish part of the liquor in the new cook, as well as in supplying heat for other components of the system. 1 figure. L.E.W.

SULFITE WASTE LIQUOR

HINDALL, ALVA L. Battery expander. Canadian patent 491,345. Filed Feb. 14, 1951. Issued March 17, 1953. 8 claims. Assigned to General Motors Corporation.

A negative plate paste for use in lead storage batteries includes an expander (92% by weight of the paste) for improving the cold discharge rate. A preferred form of the expander comprises 34 parts lignin-bearing material (e.g., red oak sawdust), eight parts carbon black, 17 parts barium hydroxide, seven parts sodium hydroxide, 34 parts lignone (spent sulfite liquor) and 1.2 parts nickel sulfate. R.C.R.

TALL OIL

SOMMER, HARRY J., ALBIN, TOM B., and WILLIAMS, PAUL H. Organic acid-polyamine adducts. U. S. patent 2,636,028. Filed March 24, 1950. Issued April 21, 1953. 20 claims. Assigned to Shell Development Company. [Cl. 260-97.5]

Treatment of a holoepoxalkane (epichlorohydrin) with a concentrated solution of ammonia in water to produce polymeric oxygen-containing amines and condensing these amines with an organic acid or a derivative hydrolyzable to an organic acid, yields a composition useful for coating and sizing paper fibers, as a lubricant, or as a modifying agent for asphaltic compositions. Desirable characteristics include high melting or softening points, and freedom from color. As an example, to one mole proportion of ammonia (28% solution in water) was slowly added with stirring, 0.1 mole 1,2-epoxy-3-chloropropane at 40°C. After 1.5 hours the mixture was heated to 100° and caustic alkali equivalent to the ionic chlorine present was added with subsequent heating to 175°, at which point refined tall oil (55-60% fatty acids, 34-38% rosin acids, 6-10% sterols, etc.) was added in an amount equal to one third of that required to combine with the amino nitrogen present. After one hour at 175°, the mixture was filtered to remove precipitated sodium chloride and the filtrate was cooled to room temperature. The product was a waxy solid melting at 103°. R.C.R.

VANILLIN

PEARL, IRWIN A. Production of vanillic acid. Canadian patent 491,405. Filed March 7, 1945. Issued March 17, 1953. 6 claims. Assigned to Sulphite Products Corporation.

Vanillin is converted into vanillic acid by exposing the former to the action of caustic potash or caustic soda (or mixtures of these alkalies) at temperatures not exceeding 235°C. and stopping the reaction when (or before) protocatechuic acid begins to form in the reaction mixture.
L.E.W.

WET STRENGTH

GRONICH, HARRY E. Resin for wet strength paper and process for making it. U. S. patent 2,634,246. Filed Nov. 13, 1950. Issued April 7, 1953. 11 claims. Assigned to Allied Chemical & Dye Corporation. [Cl. 260-29.4]

Details are given for producing, under well-controlled conditions a urea-formaldehyde condensation product (I) that is selectively adsorbable from aqueous solutions by cellulosic fibers, which then yield papers of high wet strength. In the production of (I) from formaldehyde and urea (molar ratios of 1.65-3:1) and a suitable buffer salt maintaining a pH of 4.5 to 6.9, the mixture is kept at least one hour at 10-35°C. Thereupon the mixture at 4.5-6.5 pH is heated above 50° (preferably refluxed) for a time period determined by a suitable precipitation test; the resulting solution is aged and neutralized. In the first stage small amounts of zinc dust and formic acid may be used. 1 figure. L.E.W.

NESTY, GLENN A., and GRONICH, HARRY E. Process for making resin for wet strength paper. U. S. patent 2,634,247. Filed Oct. 6, 1951. Issued April 7, 1953. 6 claims. Assigned to Allied Chemical & Dye Corporation. [Cl. 260-29.4]

This patent is a modification of the process outlined in the preceding patent (*cf.* above abstract). In the second stage of its formation the urea-formaldehyde product is heated for very short time periods to temperatures above 100°C. (preferably 120-150°) and then cooled rapidly to below 85°C. to arrest the condensation. L.E.W.

Book Review

SISLEY, J. P. Encyclopedia of surface-active agents. Translated from the French and revised by P. J. Wood. New York, Chemical Publishing Co., 1952. 540 p.

This book is essentially a systematic record of the commercially manufactured surface-active agents available from the various industrial countries of the world. It is set forth in two parts. The first part is concerned with general information and a system of classification. Following a short introduction and a listing of the abbreviations of references to the literature and the names of the manufacturers, a rather brief chapter (12 pages) on applications of surface-active agents is presented, listing 23 different fields. Five uses in papermaking are mentioned (degreasing and softening of paper machine felts, deinking of paper, increasing water absorption, paper sizing, and dispersing agents for pigments) but, unfortunately, no discussion of these uses is presented. It seems to the reviewer that the value of this section to the industry would have been greater if several other uses had been mentioned, e.g., controlling pitch and foam in papermaking and rheological properties in pigment coating, and if all of these uses had been discussed in some detail. The next chapter entitled, "Properties of surface-active agents" is one and one-half pages long and consists of a listing of seven drawbacks possessed by soap. This is one of the weak points of the book. Nothing is mentioned of the important physicochemical properties of such agents, except that they may be classified according to anionic, cationic, and nonionic activity. The author's system of classification is then presented. The value of this system seems to depend upon whether or not it will become sufficiently widely adopted to become useful. The next several chapters are devoted to the organic chemistry, manufacturing details, and applications of anionic materials (55 pages), cationic materials (22 pages), and nonionic materials (13 pages). One and one-half pages are devoted to products made from spent sulfite liquors. The remainder of part one contains a classified listing of commercial surface-active agents according to chemical composition. This includes not only the materials consisting of a single surface-active agent but also those containing two components and those consisting of mixtures with various other chemicals such as solvents, fatty materials, oils, albuminoids, mineral salts, and waxes. The names of the manufacturers are also given. The second part of the book (339 pages) contains an alphabetical list of the commercial brands of surface-active agents. This section is an outstanding contribution to the literature. It presents, for most substances, the name and the manufacturer, the composition, classification, properties, form in which it is marketed, reaction (whether neutral, alkaline, or acidic), agents with similar properties, and applications. Over 2500 products are listed from 150 firms located all over the world. This compilation alone represents a prodigious amount of work, especially if one considers that much of the compositional information came from the author's analyses. Needless to say, in a field where similar new products are marketed every week, a book of this type may soon become out of date. However, the completeness of coverage up to 1952 is very good, and it is to be hoped that supplementary information on the newer products may be published from time to time. This book should be of great value to those industries which use a variety of surface-active agents and to chemists and chemical engineers working in the chemical industry.

John W. Swanson

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